Volume 77 Numbers 1 & 2
January/February 2009

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Amateur Radio

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Our Cover this month

The five antenna solar power array under construction in outback Queensland. See the story starting on page 27. Photo by Don Marshall VK4AMA.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

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Editorial comment

Peter Freeman VK3KAI

Another New Year.....

Some changes are about to happen on the world stage, most notably in the US with the inauguration of Barack Obama as President. I am sure that we will all watch with interest to see the resulting changes.

With the financial melt down that occurred in the second half of 2008, many are forecasting doom and gloom. Some advertisers are saying that they are (or have already) reviewing their plans. For example, Vertex Standard (Australia) has decided to withdraw their display advertising from Amateur Radio. This does not mean that they are going away, simply changing the manner in which they engage with the amateur community.

Of course, another impact has been the changes in the exchange rates between the Australian and US dollars – from a recent peak of around 0.92 around May 2008 to the mid to high 0.60s of recent times – around 0.68 at the time of writing this piece. Depending on how you look at the maths, this means that all things coming from overseas will cost us of the order of 30% more. Many areas of the economy are winding back somewhat, with reports of job vacancies falling significantly and of companies reducing the size of their workforce. It remains to be seen what will be the impact on our hobby – I would imagine that it will depend upon whether or not you are directly impacted!

Over the Christmas and New Year period, I had the chance to catch up with my wider family for a few days. A very relaxing time was one result. The period was largely spent with radio, at least until my return home. Then there was the delight of an Es opening to ZL on 2 m – one ZL in the log and a few that were very marginal that I missed. Such is the nature of Es propagation!

The world above 30 MHz

Many readers are aware that my primary area of interest in our hobby is in "weak signal" propagation on the bands above 30 MHz. I say weak signal, but often signals are extremely strong. Many newcomers to the hobby think that FM and repeaters are terrific on 2 m and 70 cm. I agree – FM mode and the repeater networks provide excellent communication opportunities, further enhanced by EchoLink and IRLP if you have such nodes nearby.

On the other hand, I have heard many Foundation licensees having terrific contacts on 2 m and 70 cm SSB, often working stations several hundred kilometres away under relatively flat conditions. Add to those contacts the delights that come with tropospheric ducting, which is more common at this time of year. Over the past weeks, the appearance of VK7 Foundation licensees on the repeaters in my local area has increased in number and in signal strength. Even greater range would be available if they explored the SSB end of the bands and used horizontally polarised antennas.

For the Advanced and Standard licensees, there are also several microwave bands. One VK2 amateur has been in the local region recently with a work assignment. Being interested in microwave propagation, he brought his 10 GHz system with him. And he had a ball, from all accounts. On one Sunday afternoon, Jack worked several amateurs around Victoria. He has been amazed by the number of amateurs active and/or with equipment in Victoria. I am sure that he will be trying to stir up more interest and activity once he returns to Sydney. Perhaps he may find the time to send us a brief report for this magazine.

Articles and photographs

With the current Field Day season, I hope that amateurs participating have packed the camera as well as the radio gear. We are always in need of good photographs. Brief reports are also welcome, regardless of the nature of your amateur radio activity – Field Day participation, a Club activity or your latest project. Remember that guidelines are available on the Amateur Radio pages on the WIA web site – under the Members area. Of course, longer articles are also welcome – in fact our stock of articles ready for publication is starting to reduce. Get to it folks – tell us about the latest activity!

73 Peter VK3KAI

Michael Owen VK3KI

The increase in examination charges explained

The WIA announced last December new charges for WIA amateur examinations to apply from 2 February 2009. As was said in the release, that date is the anticipated date that the WIA will commence conducting examinations and issuing Certificates of Proficiency in accordance with the proposed new contractual arrangements with ACMA.

The extent of the increase has concerned some people. Others have suggested that the lower fee we are offering to candidates under the age of 18 should also be offered to other groups, for example pensioners or persons holding Senior's cards.

Fee for service

One of the contractual promises made by the WIA in the contract between ACMA and the WIA is that the WIA will charge fees on a cost recovery basis only. That charge must be approved by ACMA as being reasonably related to the costs incurred or to be incurred by the WIA in relation to the matters to which the charge relates. Equally, (subject to some exceptions) the WIA cannot charge less than the cost to it of providing the service.

In short, the WIA must charge a fee for a service that recovers what it costs the WIA to provide the service.

So, as part of our negotiation with ACMA we had to demonstrate what providing the services was costing and would cost.

Determining the cost

Determining the actual cost of providing a service such as the examination service is not all that easy. There are some very easily identifiable costs, such as the cost of paper, postage, envelopes, photocopying and the like. But others are not so easy. For example, salaries are a cost that has to be apportioned. That involves identifying the time taken by tasks associated with the examinations against time allocated to other tasks. And it is not only time in preparing examination packs, and processing them, but also answering questions, telephone calls and the like. So we relied on time sheets for a period to provide a basis for the allocation of time.

Then, there are additional costs arising from the new obligations accepted by the WIA. One is, of course, the cost of the Certificates of Proficiency, as well as the costs arising from the records the WIA is required to keep.

Another of the contractual promises made by the WIA was to take out an insurance policy covering the WIA and each individual Assessor and Learning Facilitator against claims arising from allegedly improper assessments. While it may be hard to identify any substantial monetary loss that would be compensable from such an assessment, the policy does protect Assessors against the real risk of legal costs if an action is instituted. And that premium is another cost.

But let us put all of that into perspective.

What does it mean for candidates?

The WIA was charging candidates less than it cost to conduct the examination system. That meant that the members were paying the difference. The members were subsidising the examination system.

The Board thought that a good case can be made that young people in particular should be encouraged to participate in amateur radio, particularly before making a career choice. The WIA is permitted to make an exception to its obligation to adhere to the cost recovery rules in that case as to do so is consistent with the Australian Government policy on youth training. That is why we are able to avoid any increase (other than a practical assessment taken alone) for candidates under 18 years of age.

The extent of the increase has concerned some people. Others have suggested that the lower fee we are offering to candidates under the age of 18 should also be offered to other groups, for example pensioners or persons holding Seniors' cards.

Because the charges for other candidates have not been increased to cover the shortfall from lower charges for candidates under 18, it is the WIA members who are subsidising those candidates. The Board believes that is entirely consistent with the WIA's objectives.

Even the decision to charge young people a lower amount has attracted some criticism.

Now we have the knowledge

The present examination system only started in late 2005, and obviously at the start we did not really know how much it would actually cost to run. Since then we have built up knowledge and refined the means to record the necessary information.

The WIA has agreed to provide ACMA after each of its financial years its audited financial reports, which must include sufficient information to show the costs incurred by the WIA in providing the services it has agreed to provide as well as details of its income from providing the services.

After the first year the WIA had agreed to provide ACMA with a report to show whether or not its charges do in fact conform to the cost recovery requirements.

The WIA has not resisted these requirements. We believe that they benefit members and candidates and so

continued on page 12

WIA news

Eddie Saunders resigns as a WIA Director

The WIA Board has accepted with regret the resignation of Eddie Saunders VK6ZSE as Director of the WIA.

Eddie advised the Board that he wished to resign for personal reasons.

However, the good news is that Eddie is not walking away from amateur radio. The WIA Directors are very pleased that Eddie will continue as the Western Australian Regional Advisor to the National Technical Advisory Committee, and will continue to run a packet BBS for the Perth area.

He is also looking forward to again becoming involved with his radio club.

The WIA Board thanks Eddie for his contribution to the WIA.

Eddie's term had a further year to run, and so it falls to the WIA Board to appoint a Director for the balance of his term.

WIA Board appoints new Director

The WIA Board has, in accordance with the WIA's Constitution, appointed Bob Bristow VK6POP a Director following the resignation of Eddie Saunders VK6ZSE for personal reasons. Bob's appointment by the Board is for the balance of Eddie's term.

Bob retired from WA Department for Community Development a little over a year ago, after many years in administrative positions. Before that he had worked with young people. He is also involved in Scouting, having been JOTA –JOTI Coordinator for Scouts Australia since 2006.

He has also been a member of the WIA Western Australia Advisory Committee since it was reconstituted in 2007.

He brings to the WIA administrative and financial management skills as well as extensive experience of working with young people, certainly very valuable as the WIA seeks to attract new and younger amateurs.

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WIA Exam Charges to Increase from 2 February 2009

From 2 February 2009, the price of WIA examinations will increase to $67.00 (inc. GST).

However, the WIA Board is very pleased to announce that the price increases will not apply to candidates under the age of 18 on the day of assessment. The charge for these candidates will remain $35 (inc. GST), with the exception of practical assessments taken alone, which will increase from $25 to $35.

The price increases are the result of a number of factors.

The date of the increases (2 February 2009) is the anticipated date that the WIA will commence conducting examinations in accordance with proposed new contractual arrangements with ACMA. From that date, the WIA will be obliged to comply with the Commonwealth's Cost Recovery guidelines, with its charges requiring Commonwealth approval. These guidelines require the WIA to charge a price consistent with the full cost of providing the service. The WIA will subsidise the lower charge for candidates under 18. This is consistent with the Commonwealth's community service obligations.

The work necessary to establish and obtain approval of WIA assessment charges has demonstrated that the WIA is currently undercharging for examination services. A number of new costs have also been incurred. Inflation has added to existing costs. The WIA has taken out a new insurance policy covering the WIA and each individual Assessor against claims arising from alleged improper assessments. There are also additional costs arising from the provision of additional services under the proposed contractual arrangements (such as the issue of amateur Certificates of Proficiency).

WIA costs and corresponding charges have been verified by the WIA's auditors and ACMA.

The WIA is a not-for-profit organisation established to promote amateur radio. The price increases are due entirely to increased costs and the provision of additional services. The larger part of the work associated with the conduct of assessments is still provided on a voluntary basis by people who believe that amateur radio is worth promoting and encouraging. No part of the charges are attributable to the time of WIA Assessors, Learning Facilitators, the WIA Directors, Secretary or the WIA Registered Training Organisation.

ACMA Publishes Revisions to the Radiofrequency Spectrum Plan

On 2nd January 2009, the revised "Australian Radiofrequency Spectrum Plan"(ARSP), was published on the ACMA website. The new ARSP can also be found in the Members Area of the WIA website under Legislation.

The WIA made a submission in respect of the draft ARSP and that can also be found on the WIA website.

This is the first step in authorising access to the new LF band for advanced licence holders. However, until the Amateur Service Licence Condition Determination (Amateur LCD) is amended, amateurs cannot use this new LF band.

The WIA has been assured by ACMA that the first steps in the process to amend the Amateur LCD have been taken, but it will be some months before that process can be completed.

A news release on a commencement date will be published on the WIA website as further information comes to hand.

ar

Building microphone preamplifier circuitry

and making it work properly in an RF 'hot' environment

Felix Scerri VK4FUQ

I am definitely starting to get the impression that that fellow 'Mr Murphy' has a hand in the unpredictable behaviour of RF, when it comes to painful and unwanted interactions with sensitive audio circuitry. A recent construction project, involving an audio preamp in a slightly 'hot' RF environment, has taught me an interesting thing or two about preventing, at times baffling, RF breakthrough problems.

It all began when, needing an additional microphone preamplifier for recording duties, I decided to build a basic, but excellent-quality microphone preamp based on a published design which uses op amps in the active circuitry (see Reference). The circuit also features a balanced input, compatible with my existing home studio dynamic microphones. The preamp was duly built and tested 100% OK, and actually its performance as a microphone preamp was impeccable. However when it was pressed into service working into my main HF rig, a Yaesu FT-900, it was found to be chronically prone to RF breakthrough, despite being housed in a metal box, properly earthed and shielded. Explain that!

This led to a long period of investigation. As expected, it was found that the RF injection was taking place through the balanced microphone cord and the dynamic microphone itself, a fact that I found a little bemusing as in theory anyway, balanced microphone circuitry is supposed to be immune from this sort of problem! Email correspondence with the circuit's designer was somewhat discouraging; when I mentioned that the preamp was being used alongside a HF radio transmitter, I was told that no guarantees of proper operation could be offered. I understood his point perfectly, as proper design of audio gear for use in an even slightly RF 'hot' environment can be problematical to say the least. In any case the preamp worked fine when it was used as a straight microphone preamp for high quality recording purposes; that is, as long as no RF was 'floating' about.

However, as I do not like to admit defeat, I was determined to remedy this unfortunate misbehaviour. One slightly quirky aspect to the situation was that my existing microphone preamp with an unbalanced input, which is also an op amp-based design built some years ago, had absolutely no problems with RF compatibility, despite having no protection from a metal box or shielding of any kind! Why? It was a mystery. For some time I had nasty things to say about the theoretical advantages of so-called balanced circuitry. I was close to conceding defeat, but one evening whilst staring at my existing (working) microphone preamp, praying and hoping for divine inspiration, it suddenly hit me between the eyes; although a detailed technical explanation is possibly a little hazy.

The preamp tested 100% OK. But when it was pressed into service working into my Yaesu FT-900, it was chronically prone to RF breakthrough, despite being housed in a metal box, properly earthed and shielded. Explain that!

When I had built my existing preamp, although using a published design, I added a component not in the original circuit, and that was a resistor to 'terminate' the microphone directly at the preamplifier end of the microphone cable. Although not strictly necessary, I have always believed in doing this for various reasons. It would appear that by resistively terminating the microphone cable with this resistor, the cable is essentially terminated at both ends for RF frequencies as well as audio frequencies. This prevents RF pickup, as well as providing a proper resistive termination for the microphone itself. In past experiments I have always felt, on the basis of actual listening tests, that dynamic microphones always 'sound their best' when loaded in this way. Perhaps this terminating resistor acts in a similar way to a Zobel network, beloved of audio designers.

Well so much for speculation; in any case the use of the terminating resistor obviously worked perfectly in stopping all RF breakthrough quite conclusively. In the case of my latest preamp with a balanced input, and thus enlightened, I soldered a resistor from each balanced microphone connection on the preamp to chassis earth, and all RF problems were instantly solved; very simply, courtesy of two metal film 2.2 k resistors!

During this lengthy investigation process, capacitor bypasses along with ferrite chokes were tried, both singly and in combination, without success. Correspondence with the circuit's designer since this discovery had him agreeing that the use of resistive terminations is an ideal solution and is quite ingenious in preventing unwanted RF breakthrough, although this solution is not widely used, apparently! Whilst there is a slight loss of signal through the terminating resistors, this loss penalty is barely noticeable, and is more than offset by the essentially complete elimination of RF breakthrough. Fun! All courtesy of the interesting manifestations of RF.

Reference:

Elliott Sound Products, "Simple Balanced Microphone Preamp", p.122.
http://sound.westhost.com/project122.htm

ar

A 10 metre FM transceiver

Dale Hughes VK1DSH

10 m FM is an interesting and sometimes exciting band and mode to use. 10 m repeaters usually exist as separate receive and transmit sites, with radio links between the two which can often be accessed with 2 m or 70 cm radios. Also, DX contacts can be had on 10 m via the repeaters; when propagation is good it is possible to work stations across the Pacific Ocean. This article describes a FM transceiver that can be used on the 10 m band.

Frequency modulation and repeaters are usually associated with the VHF and UHF bands and there are repeaters across the country servicing the amateur community. These repeaters extend the range of operation beyond the usual 'line of site' restriction of the VHF and UHF bands. However, Narrow Band Frequency Modulation is allowed as low as 29 MHz and a number of 10 m repeaters also exist. An interesting facet of the 10 m repeaters is that they usually exist as separate receive and transmit sites, with radio links between the two sites. The links can often be accessed with 2 m or 70 cm radios, thus allowing cross-band contacts. Another interesting factor is that DX contacts can be had on 10 m via the repeaters; when propagation is good it is not unusual to be able to work stations across the Pacific Ocean and the islands in between. These aspects of 10 m FM operation make it an interesting and sometimes exciting band and mode to use.

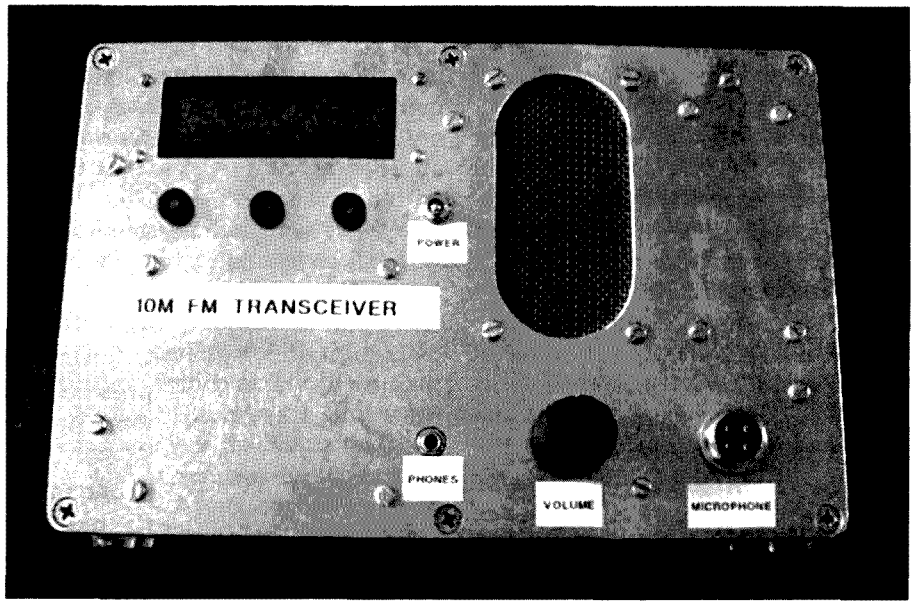


Figure 1: The completed transceiver – power and aerial connections are on the rear panel of the enclosure.

Until recently there were few radios that provided FM operation on 29 MHz, so a common method of getting equipment was to convert CB radios and this enabled many people to get on the air. Another option was to build a transverter or transceiver and this was done by a number of people, although few published designs appear to exist.

This article describes a FM transceiver that can be used on the 10 m band. All of the components can be readily purchased or recovered from surplus two-way radios and no major mechanical work is required to construct the unit. A unique feature of the design is that the transmitter uses digital techniques to generate the modulated carrier signal directly on the output frequency; no multipliers, mixers or analogue modulators are used in the transmitter signal path and this

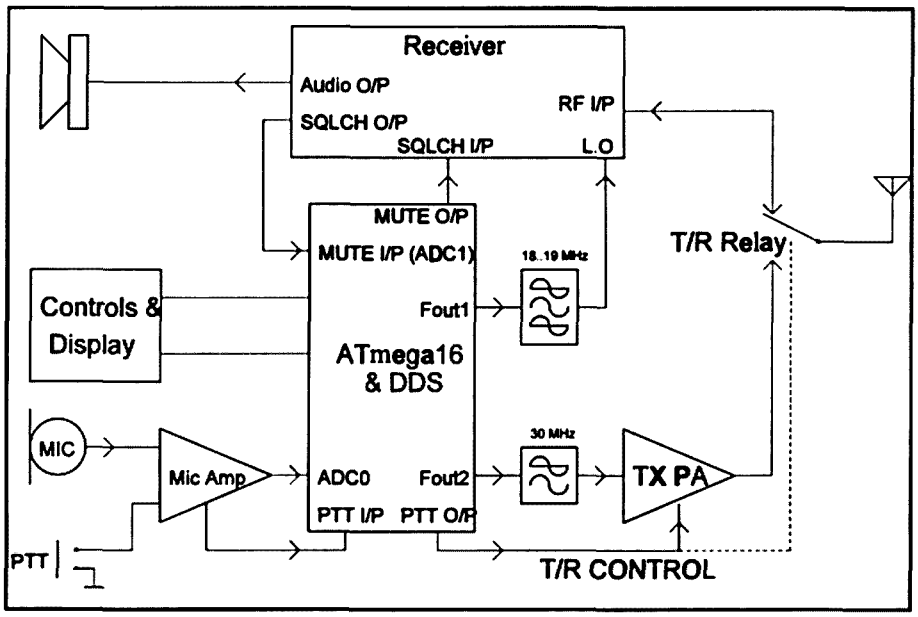


Figure 2: A block diagram of the transceiver.

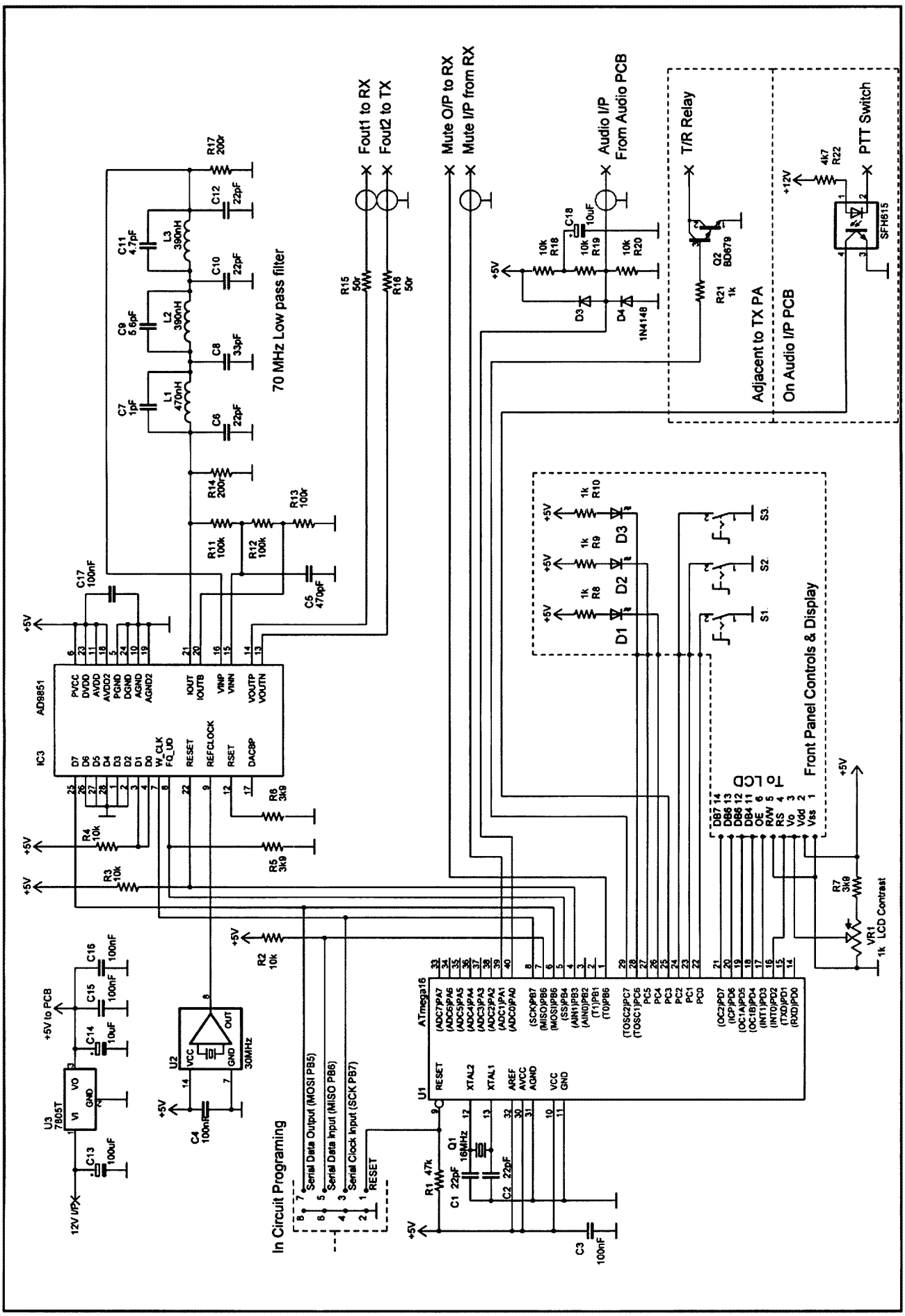


Figure 3: Schematic of the microcontroller and DDS circuit. For clarity the user controls, T/R and PTT interface are shown on the schematic; however they are not located on the DDS circuit board.

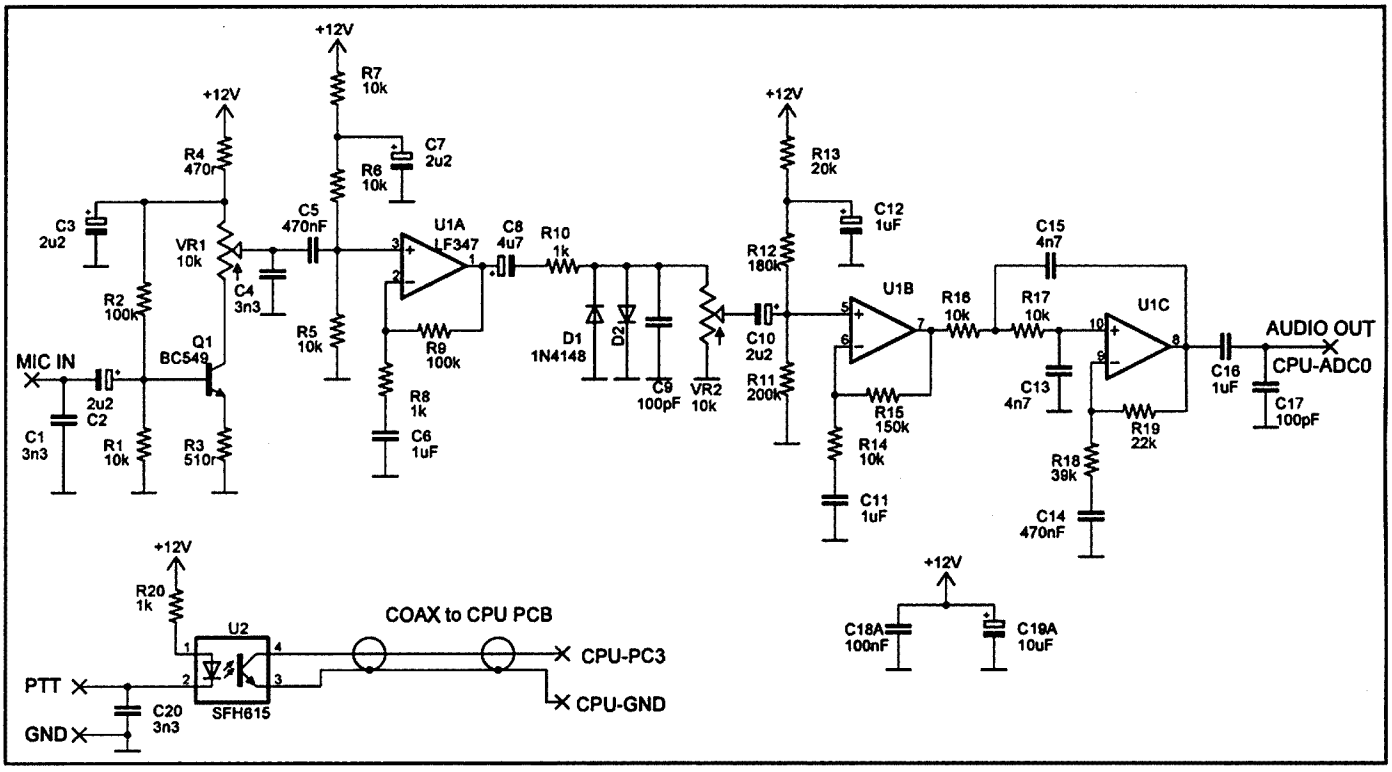


Figure 4: Microphone amplifier, audio processor and PTT circuit.

significantly simplifies construction and alignment of the transmitter. The receiver is a conventional dual conversion design with the first Intermediate Frequency at 10.7 MHz and the second IF at 455 kHz.

The same Direct Digital Synthesiser is used for both the receiver local oscillator and for the transmitter carrier oscillator; its frequency being switched by the microcontroller as required. Figure 2 shows a block diagram of the transceiver.

Circuit description

The DDS unit has been used in a number of projects and has proven to be flexible and reliable. The schematic diagram is shown in Figure 3. The DDS chip is clocked by a 30 MHz crystal oscillator which is internally multiplied to 180 MHz. The operating frequency is set, via a high-speed serial interface, by the ATmega16 microcontroller which calculates the appropriate 'phase word' for the required output frequency. A 70 MHz low-pass filter removes the image frequencies from the DDS output and ensures that the DDS output contains only frequencies below the 90 MHz

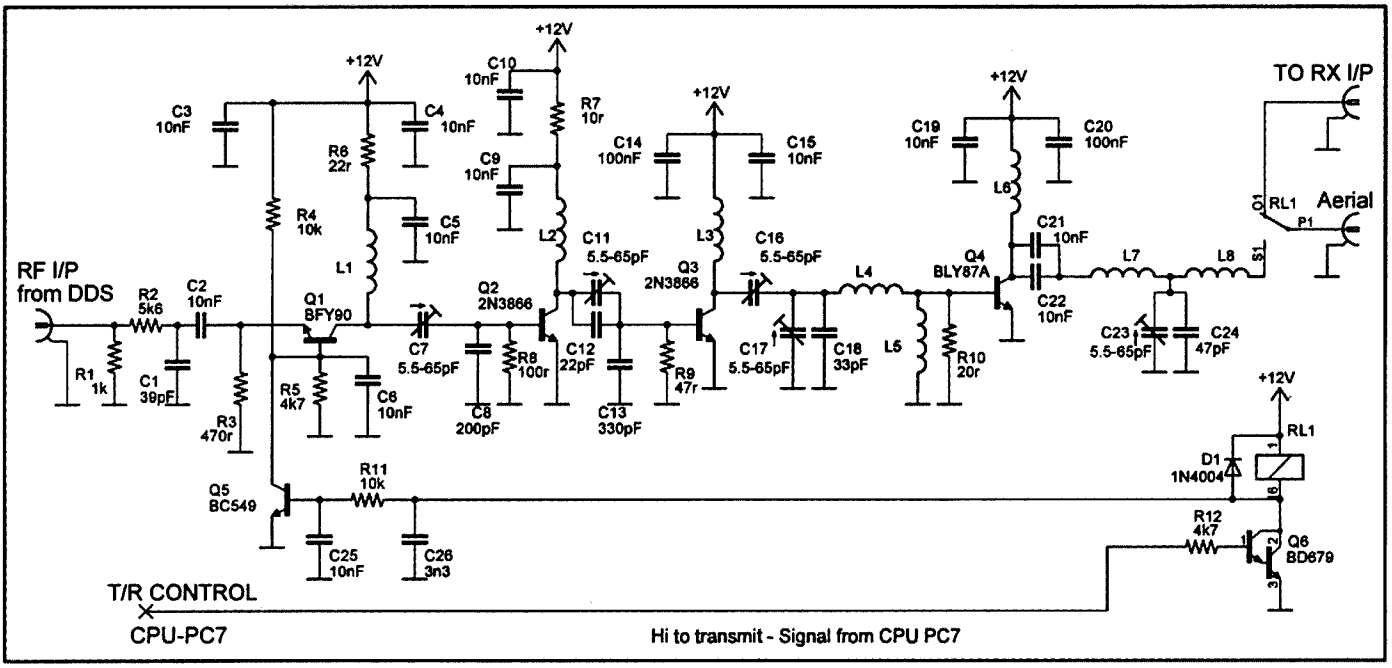


Figure 5: Transmitter power amplifier circuit.

Nyquist limit. The sine wave is then passed to a comparator (internal to the DDS chip) to produce two separate TTL level outputs which are used to provide separate RF feeds to the receiver and transmitter modules.

Modulation of the transmit carrier frequency is done digitally; the voice signal from the microphone is digitised at a 14 kHz rate by a 10 bit Analogue to Digital Converter within the ATmega16 microcontroller and the digitised signal is used to modulate the DDS output frequency. The 14 kHz digitisation rate was the maximum rate at which the ADC would give sufficient resolution and is fast enough to provide a reasonable over-sampling of the band limited (4 kHz) audio input. The ADC is triggered by a hardware counter within the ATmega16 so that the sample rate is fixed and not subject to variations in execution time of the system firmware. The time between samples is sufficient for many CPU instructions and the time used to process each audio sample, generate tones, scan the operator controls, and so on.

The 'no-signal' input to the ADC is held at half scale (~ 2.5 V DC) by a resistor network, and the network also protects the ADC input from overload by means of a diode clamp which keeps the input signal between approximately 0 and 5 volts. The digitised voice signal is processed by the ATmega16 microcontroller and the frequency modulation information is sent to the AD9851 DDS chip as a 4 MHz bit stream which is updated at the 14 kHz sample rate. The operator chooses the transmit frequency by stepping through a range of selected frequencies and the voice signal shifts the carrier frequency above and below the carrier frequency as the voice signal changes. The ATmega16 calculates the frequency deviation so that it is not possible to exceed the bandwidth limitation of 16 kHz (for the band 28.0 to 29.7 MHz) when the microphone ADC limits are reached.

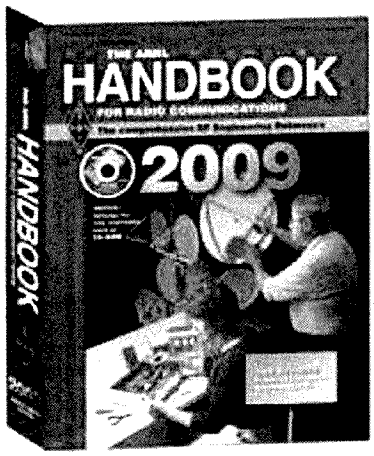
Figure 4 shows the audio processing circuitry. The signal from the microphone is amplified, amplitude limited and filtered before being digitised. This ensures maximum 'talk power' by restricting the dynamic range and bandwidth of the transmitted voice signal. As the limiter clips the voice signal, a low-pass filter is used to remove the higher frequency (above 4 kHz) voice and distortion components and to prevent any problems due to aliasing by the ADC sampling process. Additional signals such as CTCSS tones or a 'roger beep' are added by the microcontroller and can be readily changed in the system firmware.

During development it was found that stray RF energy from the power amplifier overloaded the low-level audio stages, so a number of small value capacitors were added to bypass RF from the sensitive audio stages. The press-to-talk control from the microphone is passed via an opto-coupler to simplify interfacing and reduce the possibility of RF noise pickup.

As the output of the DDS is at the transmit frequency, the signal is passed directly to the first stage of the transmit amplifier via an attenuator and low-pass filter. Figure 5 shows the transmitter amplifier. Bias for the common-base input amplifier is controlled by the Transmit/Receive control line and Q1, the input amplifier, is biased 'on' when in transmit mode and 'off' by Q5 when in receive mode. This ensures that the entire transmitter amplifier chain is completely biased off when in receive mode as no forward bias is provided to subsequent stages. The T/R line also controls the antenna changeover relay. The power amplifier stages are conventional class C amplifiers and the transmitter output is approximately 10 watts when the supply voltage is 13.6 volts. The output transistor (Q4) used in the prototype was a BLY87A device which was obtained from a defunct two-way radio, another suitable device is a 2N5591. The output transistor stud is bolted to the rear panel of the box which acts as a heat sink. A small clip-on heat sink is mounted on the driver transistor (Q3).

When receiving signals, the DDS is set to the correct local oscillator frequency which is the receive signal frequency minus the intermediate frequency: Flo = Fsig – 10.7 MHz. The square wave output from the DDS is then passed through a double-tuned band-pass filter before being passed to the first receiver mixer. The local oscillator amplitude is approximately 5 V pp at the mixer gate. As 10 m repeaters have an input frequency which is 100 kHz below their output frequency, that is, if the repeater input is 29.520 MHz, its output frequency is 29.620 MHz, the receiver

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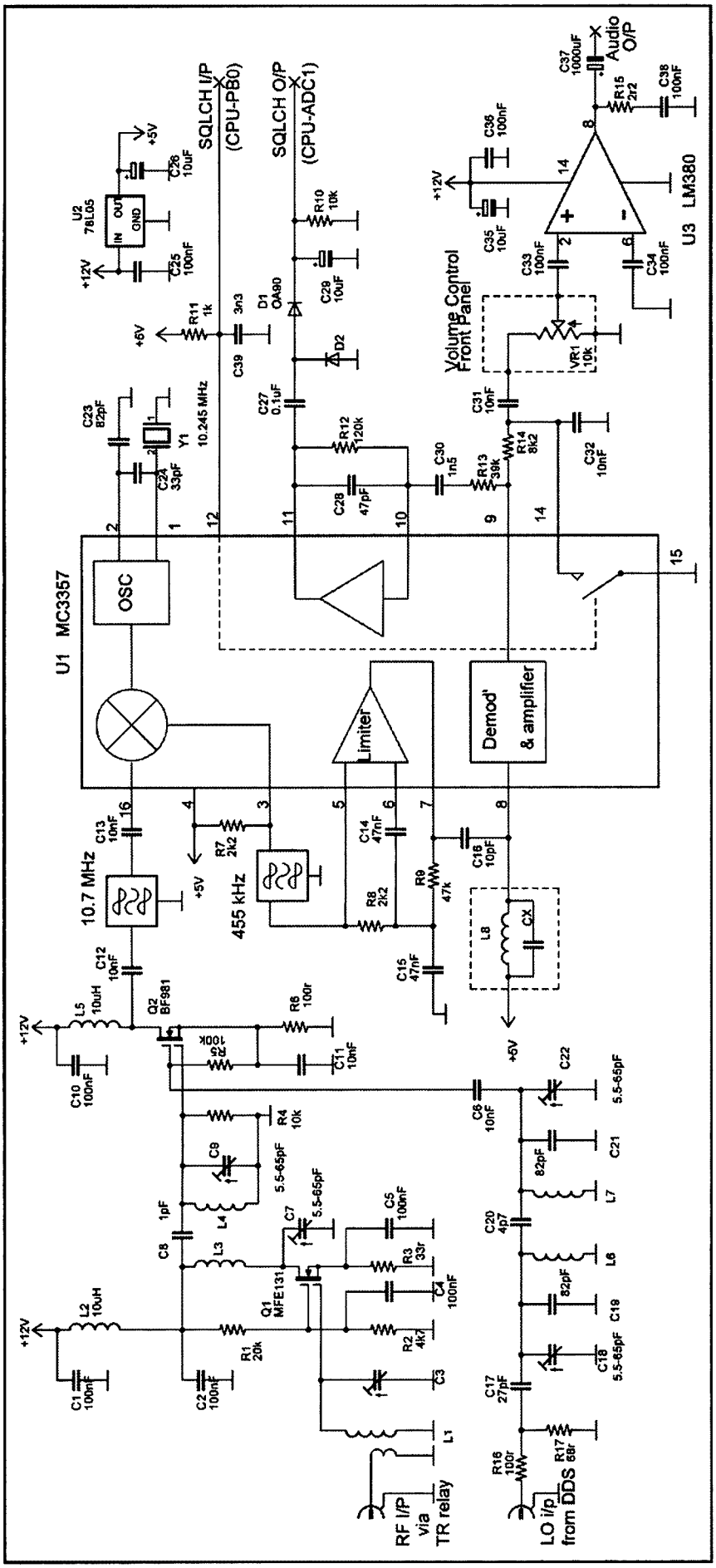


Figure 6: The receiver circuitt

local oscillator can be further offset by 100 kHz when working through a repeater. In this case the transceiver transmits at 29.520 MHz and receives at 29.620 MHz. If required the transceiver can also work with a 'reverse' split by selecting a reverse offset from the user menu.

The receiver (Figure 6) is a conventional dual conversion superhet, with a first IF at 10.7 MHz and a second IF at 455 kHz. The input RF amplifier stage and first mixer use dual-gate MOSFET devices as these were on hand. Other devices can be easily substituted if the specified types are not available. The output from the first mixer then passes through a 10.7 MHz ceramic filter (Murata type SFE10.7) into the MC3357 FM receiver chip which contains the second oscillator (10.245 MHz), mixer, limiter and demodulator. The second IF signal passes through a 455 kHz ceramic band-pass filter (Murata type CFM455D) and is demodulated by a quadrature detector. The tuned circuit in the demodulator is a common 455 kHz IF transformer. Capacitor Cx is internal to the IF transformer and its value depends on the particular transformer used by the constructor.

Following demodulation, the audio signal is filtered and passed to the LM386 audio amplifier via the front panel volume control. A squelch circuit is provided and it operates by sensing the absence or presence of wideband high-frequency noise. When no signal is present, the limiter output consists only of high-frequency noise. When a signal is present in the receiver's pass band, the noise level drops. The MC3357 contains an amplifier that is configured as a high-pass filter and the amplifier output is rectified and passed to the ATmega16 ADC for sensing. When the rectified voltage drops below an adjustable level, the audio output from the detector is un-muted. When no signal is present, the microcontroller mutes the audio by controlling a switch which shunts the signal to earth at a high impedance point in the audio chain prior to the volume control. The user can adjust the mute level via the control buttons on the front panel. The squelch control line also is used to mute the receiver when in the transmit mode.

Overall control of the transceiver is through the three front panel buttons

and a two line liquid crystal display. A simple 'soft' menu is provided in the firmware, the second line of the LCD shows the function of each button for whatever mode of operation is selected. Light Emitting Diodes in the push button switches are used as additional indicators to indicate the selection of various operational modes. The operating frequency can be adjusted in 10 kHz steps and various repeater offsets can be switched on or off. In addition the squelch level can be altered or the squelch can be disabled if required. Entry into the setup menus is allowed by simultaneously pressing several buttons.

Construction and adjustment

The transceiver is housed in a Jaycar diecast box (222 mm x 146 mm x 55 mm, catalogue number HB-5050). The DDS PCB, liquid crystal display, control buttons, audio circuitry and loud-speaker are mounted on the lid of the box. Due to the close proximity of high-speed digital circuitry to low-level analogue circuitry, several layers of screening are required to prevent unwanted RF emissions from the microcontroller and DDS circuitry from being coupled into the receiver circuitry. Un-etched PCB laminate was used in the prototype for screening the various parts of the transceiver. Most signal and control lines are run in miniature screened cables to prevent either pickup or radiation of interference. Building the unit into a larger enclosure would reduce the severity of the problem.

The aerial relay, receiver and transmitter PCBs are mounted on the bottom of the box with screens between the transmitter and receiver. Power to the receiver is passed through a feed-through capacitor and extensive power supply de-coupling is installed on the various PCB assemblies.

The most important adjustment is the audio limiter control (VR2 on the microphone amplifier PCB). It is necessary to ensure that the output level of the transmitter audio circuitry does not exceed ± 2.5 volts with maximum audio input. Exceeding this limit will cause significant distortion of the transmitted audio due to the input voltage range of the ATmega16 ADC being exceeded and the clamping action of the protection diodes. The input gain and clipping controls can be adjusted to give the desired amount of audio limiting when speaking into the microphone and observing the audio signal with an oscilloscope.

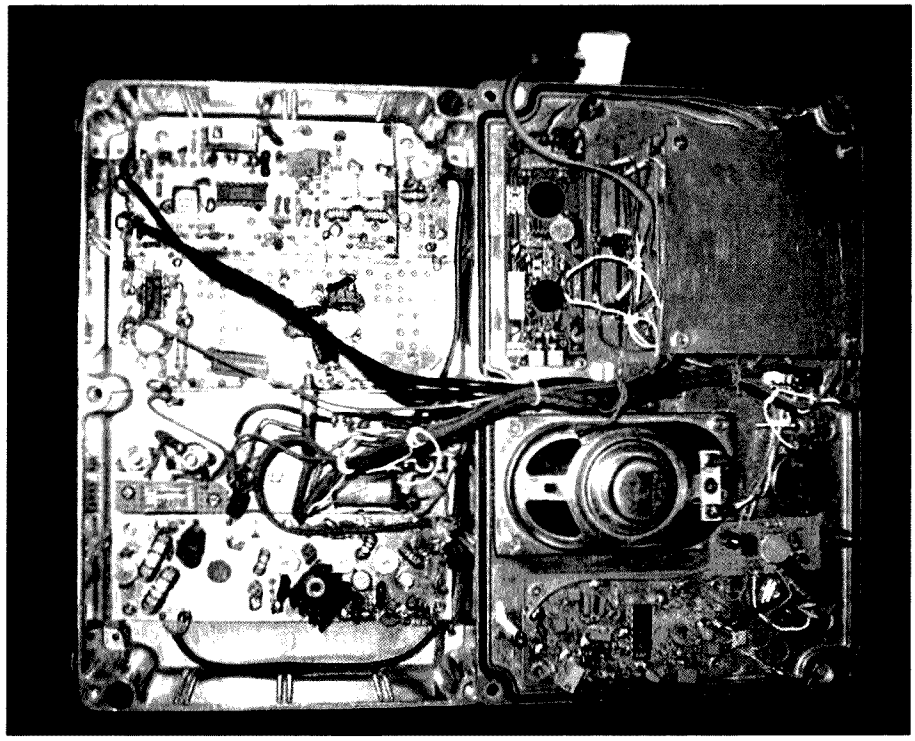


Figure 7: A look inside the 10 metre FM transceiver. The screen that usually covers the circuitry on the right hand side has been removed so that the general construction can be seen. The additional screen on the top right hand side covers the microcontroller and DDS circuitry and is required to reduce RFI from the high-speed digital circuitry. The white connector on the top right hand side is the in-situ programming input for the ATmega16 controller. Two relays can be seen; the left hand relay provides polarity protection for the DC supply input, and the right hand relay is the aerial changeover relay.

Adjustment of the receiver first requires that the band-pass filter on the local oscillator be tuned. This is best done with a high impedance RF voltmeter or an oscilloscope using a 10:1 probe. The oscilloscope should have a bandwidth of at least 20 MHz. The band-pass filter capacitors should be adjusted to give maximum voltage on the gate of the mixer when the receiver is tuned to the middle of the desired tuning range. Following alignment of the local oscillator, the rest of the receiver can be aligned by injecting a signal from a signal generator and adjusting the tuning capacitors for maximum signal strength. The Q of the tuned circuits is such that it is possible to cover the band 29.1 MHz to 29.6 MHz with reasonable sensitivity. The tuned circuit of the quadrature demodulator can be adjusted to give the best quality audio output.

Adjustment of the transmitter requires an iterative approach and the transmitter should be adjusted in the middle of the wanted transmit range with a dummy load on the antenna output. Each of the trimmer capacitors should be adjusted in turn to give maximum output. It may be necessary to repeat the adjustments several times to obtain maximum output. No spurious oscillations or instability was observed in the prototype transmitter; the bandwidth of the transmitter is quite broad and will easily cover the range 29.1 MHz to 29.6 MHz.

Components

It is now becoming more difficult to acquire some once common RF components, however surplus commercial transceivers can be easily obtained and contain many useful parts. IF band-pass filters, transistors, trimmer capacitors and the like can all be obtained and reused in the construction of this 10 m transceiver. The MC3357 was used as it was on-hand. However, it can be replaced by a MC3361 with minor changes and it will provide slightly improved performance. The MC3361, 10.245 MHz crystal and ATmega16 are

available from Futurlec (www.futurlec.com). Other 10.7 MHz and 455 kHz band-pass filters may be substituted according to availability; however the terminating resistors may need to be altered to suit the filters being used. If ex-equipment filters are not available, Barend Hendriksen HF Elektronica BV in the Netherlands (http://www.xs4all.nl/~barendh/Indexeng.htm) has a range of filters, as well as the MC3357, available for purchase.

The AD9851 DDS and 30 MHz crystal oscillator is available from Mini-Kits (www.minikits.com.au). PCB artwork for the DDS circuit board and the system firmware are available from the author. Artwork for the receiver and transmit amplifier is not available, but much of the circuitry can be constructed on Veroboard or by using 'Paddy-board' construction techniques.

There are quite a few inductors to be hand wound and Tables 1 and 2 give the details for the receiver and transmitter inductors. All of the hand wound inductors are wound on Amidon toroids which can be obtained from a number of different suppliers. The RF chokes do not appear to be critical and can be substituted with inductors wound on suitable ferrite cores if necessary.

Conclusion

An FM transceiver for the 10 m band, using a mixture of digital and analogue techniques has been described. The performance of the transceiver is excellent with good receive sensitivity and a high quality transmitted audio. The unit is easy to operate and various functions can be changed by modifying the system firmware. The design represents a first step in progress towards greater use of Digital Signal Processing techniques in RF circuitry using (where possible) low cost and readily available components.

As the DDS usable upper frequency limit is approximately 70 MHz, the circuit could be modified for use on the 6 m band if required. If operation at other frequencies is desired, the matching networks between stages of the transmitter chain will need to be altered. The Motorola application note AN-267 'Matching Network Designs with Computer Solutions' provides tabulated values for matching networks. The tables were used in the design of the 10 m version. The application note is available on the web at http://www.lansdale.com/Articles/an267.pdf as well as at other locations.

Changing the receiver to other frequencies involves changing the signal frequency tuned circuits and local oscillator band pass filter. The required inductance and capacitance can be readily calculated then appropriate toroidal cores selected. The Amidon website https://www.amidoncorp.com/ has datasheets available on their range of toroid cores. The datasheets also give the equations to calculate the number of turns for a given inductance.

I would like to thank Bill Maxwell VK7MX for his careful reading of the manuscript and helpful suggestions.

Inductor	Turns/inductance	Type
L1	3 t primary 18 t secondary	T37-6 toroid
L2	10 uH	Axial inductor
L3	18 t	T37-6 toroid
L4	18 t	T37-6 toroid
L5	10 uH	Axial inductor
L6	10 t	T50-6 toroid
L7	10 t	T50-6 toroid
L8	455 kHz IF transformer	White core

Table 1: Receiver inductors; all wound with 0.5 mm enamelled copper wire.

Inductor	Turns/inductance	Type
L1	15 t	T37-6 toroid
L2	10 t	T37-6 toroid
L3	RFC	6 hole bead
L4	9 t	T37-6 toroid
L5	RFC	6 hole bead
L6	2 t	F14 balun core
L7	9 t	T68-6 toroid
L8	12 t	T68-6 toroid

Table 2: Transmitter amplifier inductors; all wound with 0.63 mm enamelled copper wire.

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The increase in examination charges explained (WIA Comment)

continued from page 3

benefit the WIA. They should provide reassurance for candidates and those training them that the WIA is not taking advantage of its monopoly to provide amateur examinations by imposing charges that produce profits it would not otherwise have and at the same time provide reassurance for its members that their funds are not being unreasonably used to provide a benefit for people who may not be members.

Charge is fair

Frankly, I believe that what we will be charging is what we should be charging, and indeed, what we should have been charging for some time.

The candidates still get the benefit of the many volunteers. Assessors and Learning Facilitators cannot charge for their services. Our RTO does not charge. Think of the cost if all that essential work was a cost that the WIA was bound to recover.

So, the difference between the charges before 2nd February and after that date is not the difference between a high profit and an even higher profit.

It is the difference between the members subsidising an activity and subsidising it to a very much lesser extent.

It is also the difference between being able to say now that we are satisfied that the actual costs we rely on to fix the charges are accurately identified because they have been verified not only by our auditors but also ACMA.

And the WIA's obligations to review and report will hopefully reassure everyone that the WIA is subject to reasonable external monitoring.

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Buying second hand equipment

Jim Linton VK3PC

The cheapest way to get on air is to purchase second-hand equipment – but it can have traps and pitfalls for the unwary. Luckily those selling pre-loved amateur radio equipment are normally honest and reluctant to do the wrong thing to a fellow radio amateur.

However there are a few who misrepresent the equipment and want to rip off unsuspecting buyers. On occasion too there have been fraudsters selling equipment on-line that they did not have in their possession. Their plan is to pocket the money received from several keen buyers.

If this happens to you, seek the advice of your bank or credit card provider – for a fee you will often get the payment reversed, resulting in a partial refund.

Here are a few of the traps:

- Online for sale items sometimes include a photograph – but do not be tricked – it might be an image grabbed somewhere and not actually an image of the item for sale.
- With SWR bridges, RF wattmeters and dummy loads – know their specifications – such as power handling capability and frequency of operation. Will they suit your requirements?
- Transceivers and other equipment can come in various models, make sure you know what you are buying, its age and capabilities – a Google search or a knowledgeable radio amateur will help out here. Ask how old it is, if there are any faults or modifications. Did the seller buy it new? Was it purchased from an authorised manufacturer's agent or bought overseas and imported? This last point is particularly relevant for late model transceivers – it may affect the availability of local service if it needs repair.
- Is the transceiver complete? Does it come with a microphone and power cord? These ancillary items can be costly or difficult to obtain. Is the operator's manual supplied? Again, make sure you know what you are buying – is it a complete, ready to work transceiver or something less?

Good and useful equipment can be obtained second hand – approach this marketplace with knowledge and care for the best result.

Thoughts on second-hand gear

While the price of a basic new transceiver is within the financial reach of many, used equipment can be ideal and if it is wisely bought can provide many years of good service.

An advantage of buying new through an authorised agent or re-seller is that it will come with manufacturer's warranty. Be very careful because it is the practice of some manufacturers to only repair those transceivers sold through its dealer network.

When buying second-hand some people ask the seller if they have the original receipt or other proof it was purchased through an authorised agent. If the equipment fails and it was not sold by such an agent, then repairs to it may present a problem.

For example it was once much cheaper to import an Icom IC-706 transceiver than to buy one locally through an authorised dealer. The volume of these imports being sold in Australia, or personal imports, is attributed to actually driving down the retail price of that popular rig.

The manufacturers know through equipment serial numbers which units were sold through their authorised agents and those that were not. At least one major manufacturer refuses to provide any repair service for the so called grey-market equipment that is imported.

Modern equipment is very reliable and some buy an import at a slightly lower price rather than the factory-backed Australian warranty option, and take the risk.

What to buy?

Let us look at HF transceivers. The new price may be about $1200 and second hand, depending on its age, features and popularity can be $300-$900.

The best advice, just like buying any major consumer item, is to know what is on the market that could suit your needs and finances. Once you have a particular transceiver or a short-list that is the time to start looking.

For a newcomer into amateur radio it can be bewildering to work out what you need, so if you can find an experienced radio amateur or mentor to help all the better. Do check the magazine advertisements and equipment reviews, including user reviews on the eham website www.eham.net or check out the basic information at www.rigpix.com

Reviews of transceivers are published in magazines including the WIA journal *Amateur Radio*, and particularly informative in recent years have been articles on older equipment by Ron Fisher VK3OM.

There are very old transceivers made up to 40 years ago that fall into the 'boat anchor' category because they have vacuum tubes (valves) in the receive and transmit sections. Apart from replacement parts being hard to find, these old rigs do not perform very well, may drift in frequency and lack receiver sensitivity.

One of the joys of amateur radio is the opportunity to operate portable (and mobile), and transporting an old valve rig is not really practical, and might even lead to its failure.

Continuing on the topic of second-hand equipment, after the all-valve transceivers came the hybrids. Most commonly these had solid state receiver and transmitter sections with the exception of the driver and/or power amplifier stages.

A concern associated with hybrids

is the availability of transmitter tubes. While there have been doomsayers claiming these will be unobtainable, that is not the case.

Rigs that fall into the hybrid category include the Yaesu FT-101 series and Kenwood TS-520/820/830 models.

The prices do vary among the hybrids with some of the earlier ones not having the so-called WARC '79 bands of 12 m, 17 m and 30 m, and the 160 m band was also not always provided. Some have AM while others include FM.

While the three WARC bands cannot be used by a Foundation Licensee, they do make the radio a little more attractive when it comes time to sell it later down the track.

Then the all solid state transceivers arrived, such as the Yaesu FT-7, FT-707, FT-77 and Kenwood TS-120/130.

In 1982 the TS-930S became the first solid state HF transceiver with a built-in antenna tuner, and in 1989 digital signal processing arrived in the TS-950SD. In 1993 Kenwood released the TS-50S, the first compact 100 watt HF radio.

The competition between the big three - Yaesu, Icom and Kenwood - heated up at this time with each producing feature-packed fully solid-state base and mobile HF rigs. Yaesu produced its FT-100 and the Icom IC-706 was born.

During this period some manufacturers suffered quality control failures such as dry solder joints, phase locked loop failures and digital display malfunctions resulting in warranty work.

So far we have only been talking about 100 watt transceivers. The solid state models are powered by 12 volts DC and most do not have an inbuilt power supply or antenna tuning unit, with those accessories adding to the total cost of setting up a station.

In more recent years manufacturers have produced low power or QRP transceivers such as the multi-band, multimode Yaesu FT-817 and the Icom IC-703. These are not only great for portable use but can be ideal for a Foundation Licensee who is restricted to 10 W power output.

A popular unit in the late 1970s was the Yaesu FT-7, primarily aimed at the mobile market but which became a popular base station for Novice Licensees.

This set in good condition has been selling for around $300, making it an affordable first rig option. It has none of the bells or whistles of more modern transceivers. There was also the FT-7B that gave a higher transmit power output.

Second-hand rigs woes

It is always best is to see the transceiver working, but that is not always possible particularly if buying off the internet.

Some retailers do sell second-hand gear, these may be trade-ins or items held on behalf of someone else for a commission sale. Occasionally retailers offer a short warranty, say a month, or it can be an 'as is' transaction without any comeback.

The most important thing is to know what you are looking for, having done your homework to enable an informed purchase decision.

One consideration can be the equipment's cosmetic condition; look for signs of wear and tear. If it has rust or corrosion it might have been used in a poor environment such as being installed in a boat, or stored inappropriately.

Damaged or missing case screws may mean it has been modified or repaired, and sometimes this work can be of poor quality.

Always give the transceiver and its microphone a light sniff, I will explain why later. To test a transceiver, the minimum you need to do is power it up to make sure it looks (lights up) right, and with a dummy load and an SWR bridge or power meter, measure its output on several bands. Use a short wire antenna for a receiver (not transmit) test too.

An on-air test is always better, but also combine it with a power output measurement. Do all the switches, the frequency display, gain and other controls work?

An operator's manual is essential, even if it is a photocopy or internet download, so you can know how to make the set work.

The ash tray effect

Another problem with second-hand transceivers and power supply equipment is that the previous owner may have been a heavy smoker.

We have all seen those anti-smoking commercials on television and the impact on lungs. Electronic equipment also breathes in nicotine, a toxic oily chemical, and other particles contained in tobacco smoke.

The long-term effect of nicotine on components such as air-spaced capacitors, coils, switches and printed circuit boards is well known and can result in unreliable performance or even equipment failure.

Affected equipment can stink, particularly when it is powered up, and may require extensive cleaning and odour mitigation treatment.

Happy buying!

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Understanding and building the OCF dipole antenna

Ron Bertrand VK2DQ

Want to build a simple, efficient, multiband antenna?

One of the best inexpensive multiband antennas is the off-centre-fed (OCF) dipole. These are wonderfully simple antennas that permit multiband operation with little or no tuning. The OCF dipole does require a balun. In fact the only difficult part of an OCF dipole is the balun and I will be explaining how the balun works and also how you can make your own. We shall see how many choose to either use a 4:1 or 6:1 balun for an OCF dipole. I use an OCF dipole with a 4:1 balun and find it works very well and the 4:1 balun is a bit smaller, lighter and cheaper to construct than a 6:1. However for those who want to construct a 6:1 balun I will explain how that can be done as well. Before we get going let us try and understand what the OCF dipole is all about. It all started with the Windom antenna.

Windom Antenna

The Windom was once a very popular multiband antenna. The antenna is named after its inventor, Loren G. Windom W8GZ, who first published details of his antenna design in 1929. The Windom is just a horizontal half-wave of wire on the lowest frequency of operation. The Windom uses a single wire as the alleged feedline. Instead of being fed in the centre the single wire 'feeder' is attached to the dipole 14% off centre. See Figure 1.

There is no transmission line used on the original Windom. A single wire is attached 14% off the centre of the dipole. This wire feeder is then connected to an antenna tuning unit (ATU). The idea of feeding the half-wave off centre was to find a point where the impedance "is easier for the tuner to cope with" across multiple bands which are related to even harmonic lengths of the dipole. The Windom was an 80-metre antenna. The single wire was thought to have an impedance of 600 ohms against ground.

The logic goes like this: since the centre of a dipole is about 70 ohms and the ends 2-3000 ohms, the theory goes that we should be able to find any impedance between these two extremes along the antenna. The theory is good but we need to translate it into practice. So a point could be found, presumed to be 14% off centre, where the feedpoint impedance was 600 ohms. While the theory might sound good I have some difficulty with this hypothesis. First the feedpoint is not at the antenna. The feedpoint is at the station end of the vertical wire. The so-called feeder of the Windom is a radiator as much as the half-wave top section. The feeder on the original Windom was supposed to come away from the dipole at right angles for at least one half the length of the antenna; in other words, a quarter wave. I am a bit lost regarding the reason for this distance, but I can easily see the Windom as a vertical wire antenna with a large capacitive hat. Still the antenna enjoyed a lot of popularity for many years because it did work with an ATU. It could be tuned on multiple bands.

However, so could almost any bit of wire, if high voltage points were avoided. A high voltage point occurs when the wire length is a half-wave long or multiple thereof; in other words, a high impedance point. Since the feeder wire radiates there will be RF radiation in the shack. With today's concerns about the potential dangers of electromagnetic radiation, this should be avoided. The old-style Windom would not meet our present-day EMR safety requirements if you are using 100 watts or more. Indeed my first introduction to the Windom was at a Jamboree of the Air around 1976. That was the year I received my first RF burn as a direct consequence of placing my forearm close to the "feeder" wire of the Windom while the station was transmitting. While it hurt, I did think it was cool at the time. I felt like I had been initiated to the RF burn club. Such a risk is not acceptable today. RF energy can cause cumulative and permanent damage to tissues of the body.

It is often said about antennas like the Windom that they are "worked against their image in the ground". I think statements like that are most confusing. It conjures up a picture of something actually being in the ground.

A Windom is just a horizontal half-wave without a real transmission line. It is not really a half-wave antenna because its so-called feeder radiates and is, therefore, part of the antenna. Like most antennas, reflection of radiation from the ground modifies the radiation pattern. That is what is meant by "it works against its image".

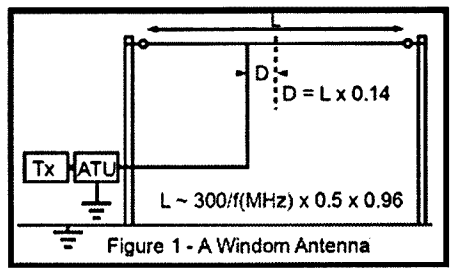


Figure 1: The schematic of a Windom antenna.

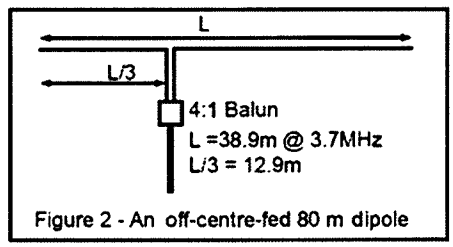


Figure 2: The schematic of an Off-Centre-Fed 80 metre dipole.

So why talk about the Windom if we are not going to rate it well? The principle of finding a point on an antenna where an acceptable or workable impedance match can be obtained across multiple bands is sound. This was the objective with the Windom. Find a point on a dipole that will permit the best multiple-band operation. Did the Windom achieve this? Well, I suppose it did but without an antenna tuner and the more robust transmitter output tuning found in older transmitters you would have trouble with a Windom today.

An improvement on the Windom is the Off-Centre-Fed Dipole or just OCF.

Off-Centre-Fed Dipole

OCFs are a descendant of the Windom. A standard horizontal dipole is fed at a position other than the centre. The objective being to find an impedance on the antenna that can provide a reasonably good match to the transmitter across multiple bands which are even harmonically related, such as 80, 40, 20 and 10 metres. The idea of feeding an antenna off-centre is not new but for some, at least at first, it appears odd. A half-wave antenna is a resonant antenna irrespective of where it is fed. The end of a dipole is 2-3000 ohms and resistive. The centre is about 70 ohms and resistive. Between the centre and the end you could find any resistive impedance between these two extremes (70-3000 ohms).

So, if we wanted to find a point that was 300 ohms and resistive theoretically we could do it. Indeed the idea is not new. For example, delta and gamma matches use this principle. A Quad loop can be fed at the centre of one side (125 ohms) or at a corner (144 ohms) to find an appropriate feedpoint impedance. When we change the feedpoint position on a Quad, we are changing the feedpoint impedance. The resonance and other characteristics of the Quad loop are not substantially changed by the feedpoint we choose. This is how it is with a dipole as well.

How far off-centre?

The exact position off centre seems to vary somewhat and would seem to be a matter of debate. The length of the dipole is based on the standard length equation.

$$l = \frac{300 \times 0.5 \times 0.96}{f}$$ where l is in metres and f is in MHz.

Windom gave his offset (from centre) as L x 0.14 or (14%). The true OCF dipole must use coaxial or parallel transmission line to eliminate feeder radiation. Two popular amateur handbooks give the offset as L x 0.167 or 16.7%. I have also seen designs with an offset of L x 0.174 or (17.4%). There seems to be a bit of variation.

The objective of these offsets is to strike a spot on the antenna off-centre that has an impedance of around 300 ohms resistive. If this sweet spot can be found, then a 4:1 or 6:1 balun can be used to provide a match close to 50 ohms.

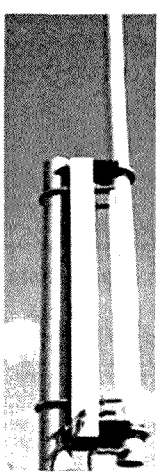
Even if the impedance varies around 300 ohms a balun will bring the impedance close to 50 ohms. Some designers use a 6:1 balun. I find a 4:1 is all that is necessary if the right spot can be found. The problem with finding

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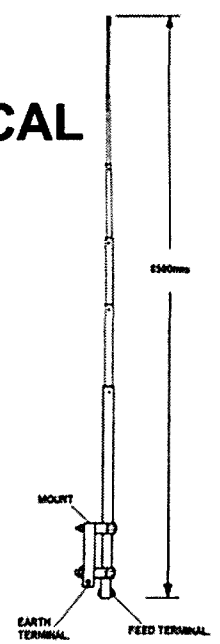


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the exact spot off centre is complicated in my view by unpredictable variables. The best that can be achieved is close and then practical adjustments have to be made to the antenna. Wire antenna characteristics are always a bit rubbery. You can not take designs out of a book and expect the exact same results in any two locations. This does not matter in practice. Where exactly we will find 300 ohms off-centre is dependent on the height above ground, type of ground, other nearby antennas or objects, wire diameter, and so on.

So, what is the correct distance off-centre? Well, it is not possible to give an exact distance. For a dipole about 10-15 metres above ground, the distance from the centre to the 300 ohm feedpoint is between 30-35% of the length of the antenna. Or 15-17.5% off-centre. Middle ground is very close to 33.3% from one end. In other words the best place to start is to place the feedpoint one third of the antenna length from one end. I stick to these dimensions as it is easy and very close to ideal and we have a 1/3 – 2/3 antenna. Figure 2 shows the dimensions of an OCF dipole for 80 metres. The impedance one third of the way from the end should be between 200 and 400 ohms and, of course, resistive.

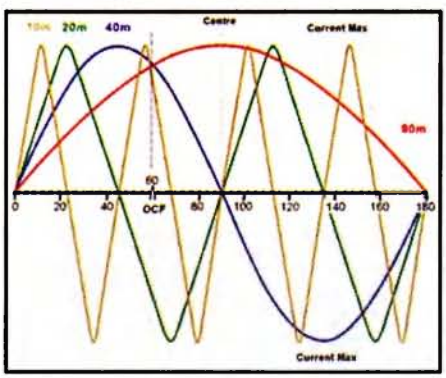


Figure 3: A visualisation of the impedance at different places on any antenna.

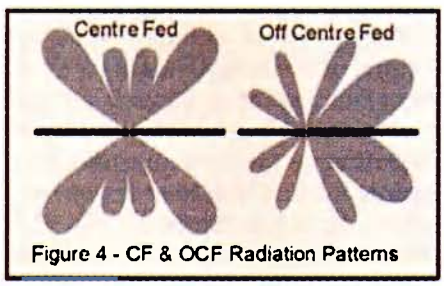


Figure 4: CF and OCF radiation patterns.

Note: When on 80 metres I operate usually much lower down than 3.7 MHz and, in fact, the SWR is very flat even if you vary these dimensions by up to 400 mm. I have found that a good, neat, and easy to remember size for an 80-metre OCF is 27 metres one side and 13.5 metres the other. I use 1.25 mm galvanised iron wire because it is cheap, strong, hard-to-see and is stretch resistant. However, you can use any wire that you like.

Once up, you can test measure the SWR on 80 metres and adjust the length by adding or subtracting to both sides. You are adjusting for minimum SWR not a 1:1 SWR.

An ordinary centre-fed-dipole has a low impedance at the resonant frequency and at odd multiples of that frequency. A centre-fed dipole resonant on 7 MHz will also have a current loop (a current maximum) or low impedance at the third harmonic on 21 MHz.

If you are going to use a centre-fed dipole on multiple bands, you really need to cope with high SWR and use a parallel wire feeder to minimise transmission line loss. On the other hand an off-centre-fed dipole fed 1/3 rd the length from one end will have about 300 ohms impedance at the resonant frequency

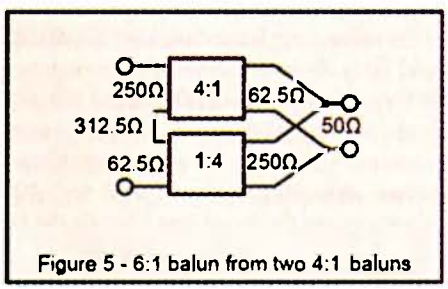


Figure 5: 6:1 balun from two 4:1 baluns.

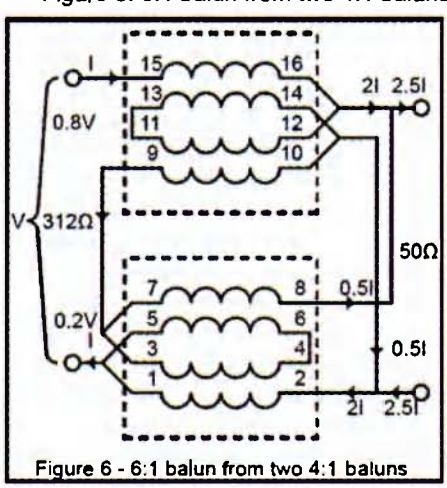


Figure 6: Circuit of a 6:1 balun from two 4:1 baluns.

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and at all even harmonics. The antenna in Figure 2 is resonant on 80 metres and has a feedpoint impedance of about 200-300 ohms which is transformed to be close to 50 ohms by the 4:1 balun. This dipole also has roughly the same input impedance on 80, 40, 20, 10 and 6 metres. Pretty good, eh!

Now that is a far more useful antenna. If adjusted correctly, you can easily get five bands of operation from the one antenna with little or no tuning. A tuning unit will allow operation on other bands as well but the SWR will be quite high on some resulting in increased feedline loss.

Looking at current distribution

Figure 3 shows a very useful and simple technique for visualising the impedance at different places on any antenna. The horizontal line in Figure 3 represents a half-wave antenna. I have marked off the length of the antenna in degrees from 0-180. The antenna is resonant on the 80-metre band. Most of us are very familiar with the current distribution of a half-wave dipole shown in red. Have a look at Figure 3 and ignore all except the red curve and you will see the current distribution of any half-wave antenna.

As you would expect, the current is maximum in the centre (90 degrees) and minimum at each end (0 and 180 degrees). There is no need to show the voltage distribution. If we did we would draw another set of curves 90 degrees out of phase with those shown. The current and voltage distribution of this half-wave antenna is the same no matter where we attach the feedline. Whether we feed the antenna at the centre, the end or somewhere else in between the current and voltage distribution will be the same as that shown in Figure 3.

Where the current is maximum, the impedance is minimum. The more current, the lower the impedance. If we connected to this dipole in the centre (90 degrees) we are connecting at a high current point and, therefore, a low impedance (from Z=E/I). The typical impedance at the centre of a resonant half-wave dipole is low – about 70 ohms. If we were to connect a typical low impedance feeder to either end (at the low current points) where the impedance is high, we would need to use some sort of impedance matching device. For example, the matching section of a J-pole allows us to connect a coaxial line to the high impedance end of a half-wave antenna.

Suppose we were to use this 80-metre dipole in Figure 3 on 40 metres. The current distribution for 40 metres is shown in blue. We get a full cycle of current distribution because the antenna is now a full wavelength. Notice how the current at the centre (90 degrees) of the antenna on 40 metres is now at minimum. The impedance will be high, indeed, very high, this dipole would not work on 40 metres unless we had a special matching system or tuned feeders. This antenna will not have a low impedance at its centre again until we tune it to its third harmonic – that is the 15-metre band (21 MHz).

The principle behind the OCF dipole is to find a compromise point on the antenna where the impedance is low enough to connect our feeder – which is usually the coaxial line – and operate on multiple bands. With the OCF we place the feedpoint as shown in Figure 3 at 60 degrees from one end. Have a look at the amount of antenna current at 60 degrees for the 80, 40, 20 and 10-metre bands. The current is not maximum for any of the above bands but the current is high and about the same value for all bands. This means the impedance on 80, 40, 20 and 10 is about the same. The impedance is theoretically about 300 ohms. It is not bad on 6 metres either though this is not shown. In practice, the actual impedance range will vary between 200 and 400 ohms across the mentioned bands. Now, that is a manageable impedance.

With a balun (either 4:1 or 6:1) connected at the feedpoint we will get multiband operation with little and often no tuning at the transmitter. A balun at the feedpoint prevents feeder radiation and transforms the impedance to a lower value close to our coaxial transmission line. Even if the impedance is not 300 ohms the use of a balun to transform by a factor of 6:1 reduces the impedance error by a factor of 6. Suppose we have exactly 300 ohms on any band, this will be transformed by a 6:1 balun to 50 ohms and the SWR is 1:1. What if, for some reason, the impedance is high, say 400 ohms. The balun will transform the 400 ohm too-high impedance to 400 ÷ 6 = 66.7 ohms. Wow! Who cares? It is going to work and work well at 66.7 ohms as the SWR with a 50-ohm line will only be 66.7÷50 =1.3:1. If the off-centre impedance was out in the opposite direction – say 200 ohms, then this is transformed by the balun to 33.3 ohms which is an SWR of 1.5: 1 on a 50-ohm line. Transmission line baluns can tolerate impedance aberrations of this scale. As mentioned, I prefer to use a 4:1 balun as it is a simpler and more lightweight balun.

Performance of an OCF

The OCF dipole is a good non-compromise antenna on its even harmonics. I have heard arguments about how it compares to a conventional dipole. Is it better in terms of antenna gain or radiation pattern compared to a conventional dipole?

Well, the OCF is a half-wave antenna on the lowest band of operation. Our OCF dipole on 80 metres will work as well and have exactly the same characteristic as any dipole on 80 metres.

On the higher harmonics, the OCF will become a progressively longer antenna. On 40 metres our OCF will be a full wavelength. On 20 metres, two wavelengths and on 10 metres, it will be a full four wavelengths. The longer an antenna becomes, the more lobes it will have.

The left side of Figure 4 shows a centre-fed two wavelength dipole and its radiation pattern. There are more pronounced lobes on this antenna but it is still essentially bidirectional. There are four main lobes. The same antenna at double the frequency would be four wavelengths.

More minor lobes will appear in the centre and the four major lobes will drop down closer to the line of the antenna. In other words, the antenna becomes increasingly directional towards the ends, though this is somewhat exaggerated in the diagram.

When we feed such an antenna off-centre, there is a tendency for the radiation pattern to become stronger towards the long side of the antenna. The longer the antenna, the more pronounced is the towards-one-end directivity. So theoretically, our OCF antenna will become slightly directional towards the longer end. However, due to other reflections, this may not be at all obvious to the user. Essentially an OCF is no better in performance than

the centre-fed dipole. The advantage of the OCF is its operation on the even harmonics. The losses are lower because the lower overall SWR means less feedline loss. This antenna is resonant on its harmonics. An SWR is acceptable up to 2.5:1 on typical coaxial runs. Typically though, this antenna will achieve an SWR of between 1.5:1 and 2:1 on most bands and this is great – even 2.5:1 is good but you will need an ATU depending on the type of rig you use. Older radios with output tuning will handle this SWR. There are some bands – for example 30 metres (10.5 MHz) where a low current (and high voltage) will appear at the 60-degree feedpoint. See Editor's note. Could you use this antenna on 30 metres with matching? Well, yes, you could but you can expect the balun not to work well or at all under high SWR. You can expect balun and feedline losses to be high(er). You can expect feedline radiation. If you are okay with all of that, then try it out.

The Carolina Windom!

There is a variation of the Windom and OCF called a Carolina Windom. This antenna is much the same as that shown in Figure 2. However, with the Carolina Windom there is deliberate feeder radiation! I believe this is achieved by the balun at the feedpoint not doing what baluns are meant to do! That is to prevent feeder radiation. With the Carolina Windom it appears that some feeder radiation is desired. That is, some radiation from the feeder is permitted or deliberate! Consequently, the radiation pattern is modified from that of a dipole and allegedly this is an advantage on some communication circuits. I am sceptical. The Carolina Windom has an additional current choke balun on the coax prior to entry into the shack to keep RF out of the station. This is evidence that the balun is not effective.

A balun for the OCF

Because the OCF is not fed at the centre, the RF impedance path for each side of the antenna is different; that is, the currents on each side will be unequal. Knowing the impedance is around 300 ohms, one could be tempted to feed the antenna with 300 ohm ribbon.

Indeed, this would work and may work well but it is no longer an OCF dipole. Because the OCF has unequal impedance each side of the feedpoint then a balanced feeder would become unbalanced and become a radiator! With coaxial cable this also means that antenna current can flow on the outside of the feeder and produce radiation. Feeder radiation is undesirable for many reasons and, in particular, the increased potential for overload to neighbouring equipment (including your neighbour's). In order to prevent it, we need to use a balun at the feedpoint of the OCF.

Which balun to use?

Well, depending on which author you read, you often get different answers. First the impedance ratio seems to vary a lot. A 4:1 balun on the OCF is common. Some commercial OCFs use a 6:1 and there are reports of 9:1 baluns being used.

As mentioned the impedance of an OCF can be expected to vary between 200 to 400 ohms. I think the optimum balun is a 6:1. However, I have used a 4:1 balun and favour it due to its lighter mass. A 4:1 can be strung in mid-air with the dipole tied off at each end. The 6:1 balun that I have used comprising two 4:1 Guanella baluns is configured to give a 6: 1 impedance transformation. In my view, Guanella baluns withstand higher deviations in impedance and SWR than Ruthroff baluns.

A 6:1 balun

Whilst not the only method, it is easy to make a 6:1 balun from two 4:1 baluns. The same method can be used in other applications and other impedance transformations so it is worth having a close look at the technique.

Figure 5 shows the block diagram of the method. Here we see two 4:1 Guanella-type transmission line baluns (I will show you how to build these devices shortly). In our case they would be transmission line baluns but for other applications they could be other types of devices. We want an impedance transformation of 6: 1 (or 1:6) to connect a 50-ohm coaxial line to a feedpoint on the OCF of about 300 ohms.

A transmission line balun designed for the impedance ratio 100:25 would not work as well (if at all) in a network with 200 and 50 ohm impedances even though the ratio is the same. The exact ratio of the design in Figure 5 is 312.5 to 50 or 6.25:1. For practical purposes

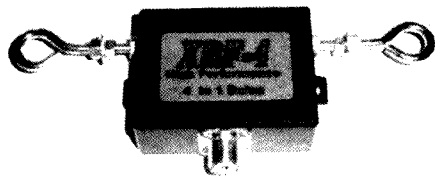


Figure 7: A commercial 4:1 Guanella balun.

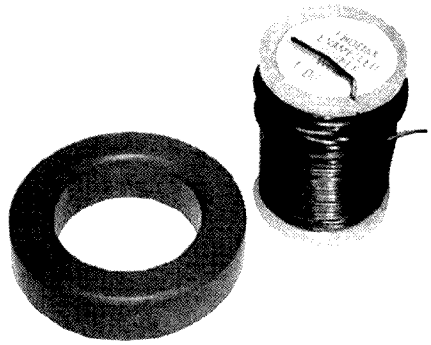


Figure 8: FT140-61 core plus enamelled wire.

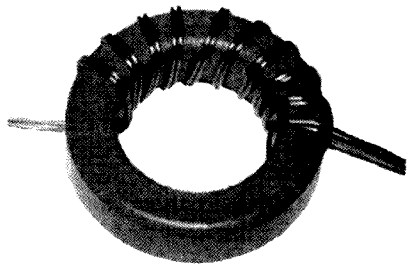


Figure 9: A 1:1 Guanella balun.

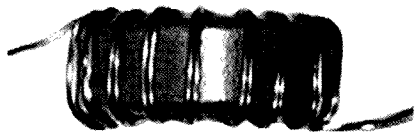


Figure 10: Side view of 1:1 balun.

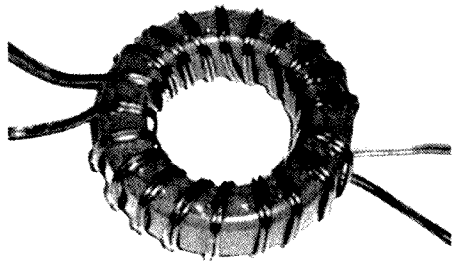


Figure 11: Two 1:1 Guanella baluns.

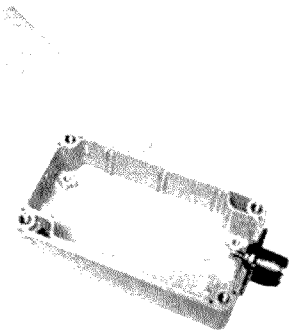


Figure 12a: Box with backing board.

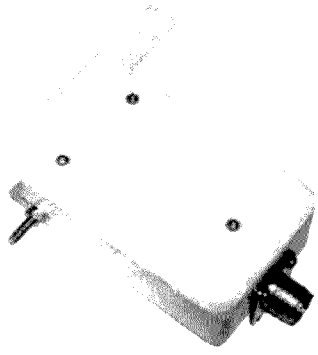


Figure 12b: The backing board fitted on to the box.

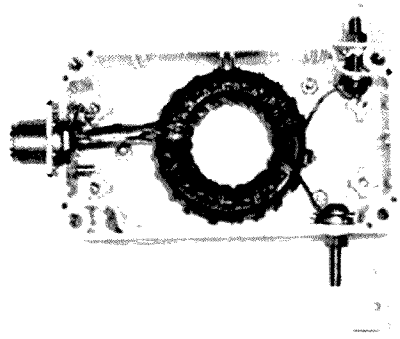


Figure 13: The mounted 4:1 balun – consider using eye bolts instead of the backing board.

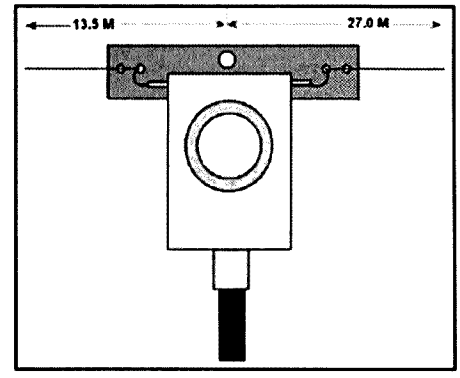


Figure 14: The antenna dimensions.

this is 6:1. Each of the 4:1 baluns is a Guanella balun. Each balun should be made from two transmission lines with a characteristic impedance which is the geometric mean of the input and output impedance for that balun. The optimum impedance for the lines making up each balun is then

$$Zopt = \sqrt{250 \times 62.5} = 125 \text{ ohms.}$$

Each balun should be made from 125-ohm bifilar windings on a toroid former with a permeability of around 125-250.

So how do these two baluns as shown in Figure 5 produce a 6:1 balun? Each balun is identical and has an impedance transformation of 250:62.5. Notice on the left-hand side how the two baluns are connected in series. The 250 ohms of the top balun is in series with the 62.5 ohms of the bottom balun. This gives an impedance on the left side of 250+62.5 = 312.5 ohms. On the right-hand side the two baluns are connected in parallel. Now 250 ohms in parallel with 62.5 ohms is 50 ohms. The block diagram of Figure 5, I hope, helps make this easier to visualise.

Figure 6 is the full schematic diagram showing the transmission lines that make up the two 4:1 baluns and how they are connected to produce a 6:1. The relative currents and voltages are shown on Figure 6 for those who want to look at the operation a bit deeper. The top balun is a 4:1 from left to right. An impedance step down of 4 will produce a current increase (step up) at the output by a factor of 2. The current (and voltage) ratio is equal to the square root of the impedance ratio. So, if the input to the top balun is taken as "I" as shown, then the output current that this balun contributes to the load will be '21'.

The bottom balun is connected as a 1:4. The output current that this balun contributes to the load is 0.51. The total current is then '2.51' for an input current of 'I'. The impedance ratio is:

$$2.5^2 = 6.25$$

which, for practical purposes, is close enough to 6:1.

As you can see a 6:1 Guanella balun is a rather complicated balun. It is also heavy. For this reason, I make a small compromise and settle for a single 4:1 Guanella balun for the OCF dipole. I have no problems with my OCF and a 4:1 balun. My highest SWR is 2:1 on any band. On 80 and 20 it is closer to 1.5:1. Please remember that these are very good Standing Wave ratios for a resonant antenna.

The Australian-made XRF-4 (4:1) is a high-quality, low-loss, Guanella balun. This balun is also fully encapsulated for superior weatherproofing. For more information on this balun visit http://xrf.redirectme.net/

Building your own 4:1 Guanella balun

To make the 4:1 balun you will need some enamelled wire. The impedance of the parallel line used to make this balun is 100 ohms. 1.0 mm enamelled wire with no spacing provides a characteristic impedance close to 100 ohms. A wire diameter from 0.8 to 1.2 mm will be adequate for the job. You will need about 3 metres of the wire.

The toroidal core needs to be the correct permeability and the right size to get the required transmission line turns. I suggest an FT-140-61 material. FT (Ferrite Toroid) 140 is about 40 mm outside diameter. Type 61 material has a permeability of 125. Cores with permeability between 125 to 250 are the best choice for this balun.

The start of a 4:1 balun is, in fact, a 1:1 balun. Take about 1.8 metres of wire and fold it in half. You have made a short length of 100 ohm transmission line. Now, mostly using your thumb, wind this line around the core. You need 7-8 turns. You are not winding a transformer. What you are doing is winding a short length of parallel transmission line around a ferrite core. Do not let the wires twist or overlap. Keep the pair of wires close together. These wires are a transmission line. They are not the windings of a transformer. The line should be kept flat and close together otherwise the characteristic impedance will alter.

You do not want the parallel line to drift apart with handling. To prevent this you could use cable ties to hold the line together. My preferred method is to tack the line in position on the toroid with spots of Araldite. A hot glue gun would work just as well. You have now made a 1:1 balun on one side of the toroid. The next step is to make another 1:1 balun on the other side of the toroid as shown in Figure 11.

You end up with four wires in each end of the toroid as shown. What you have is two 100 ohm transmission lines on the

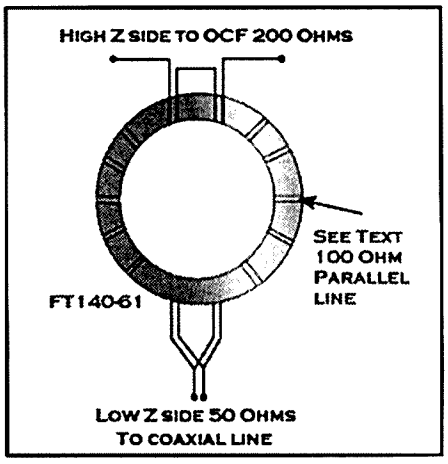


Figure 15: Balun wiring.

core. These lines are parallel connected on one side to give an impedance of 50 ohms. On the other side the two lines are connected in series to give an impedance of 200 ohms. Thus we have a 50 to 200 ohm Guanella balun. On one side of this balun you will be connecting your 50 ohm line and the other side will go to your OCF dipole. If you were using a standard dipole you would not use this balun, instead you would use a 1:1 Balun made with 50-ohm coaxial or parallel line. The toroid and the lines of the 4:1 balun cannot take much mechanical stress plus it is a good idea to waterproof the whole lot so we need to house the balun somehow.

The XRF balun shown in Figure 7 is fully waterproofed in epoxy resin. Almost any plastic instrument case mounted on a plastic backing board will do. Plastic sheets can be obtained easily and cheaply by purchasing plastic cutting board. I purchased a set of five boards for $12 which provides enough plastic sheet to make 12 baluns.

The photo in Figure 12 shows how the plastic sheet is cut to fit the size of the box you have. The sheet is very easy to cut using a hacksaw and a jigsaw is even easier. The sheet is extended away from the box at the top and has holes drilled for the dipole wire connection. Figure 12 shows the box with backing board. The box shown is a little expensive (about $7). A box which is designed to be mounted on to a flat surface can be purchased from a parts supplier for about $5-6. An SO-239 socket has been mounted on one side of the box for the 50 ohm cable connection. An alternative is to have the coaxial cable go straight to the low impedance side of the balun

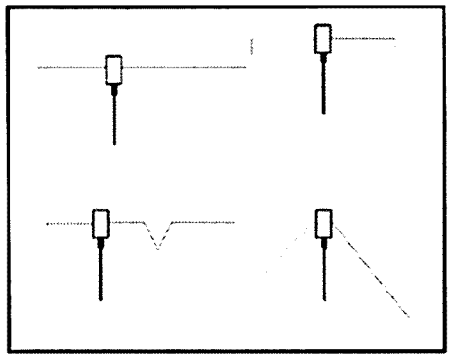


Figure 16: Running the antenna wire.

and fix it to the cutting board with at least three cable ties.

An alternative to the backing board shown in Figures 11 and 12 is to use eyebolts as shown on the XRF 4:1 balun. If you are going to make a mistake in the construction of the balun it will be in the connection of the two transmission lines at each end. On one side the two 100 ohm lines are connected in series (the high impedance antenna side of 200Ω) and on the other side the two 100 ohm lines are connected in parallel (the low impedance 50Ω line side).

To make this a little clearer, refer to Figure 15 below. Here you can clearly see the series connection on the high impedance side (that goes to the antenna) and the parallel connection on the low impedance side.

Many of us are limited by the height we can have our antenna and often, on 80 metres, we are pressed for space. The overall length of my OCF for 80 metres is 40.5 metres (27 + 13.5). I have a straight run at about 10 metres height. However, you can treat the OCF like any half-wave horizontal dipole and bend the legs in various configurations as shown in Figure 16. If it is difficult for you to get height, consider the inverted "V" configuration. It is the centre of the antenna (where most of the radiation occurs) that should be as high as possible. The ends can be brought lower down and terminated through insulators to a building, pole or fence line.

A bit more about baluns

Just to round off, I would like to talk a little more about baluns. I don't recommend a 9:1 balun for the OCF antenna. However, I thought I might include the circuit diagram of a 9:1 Guanella balun since

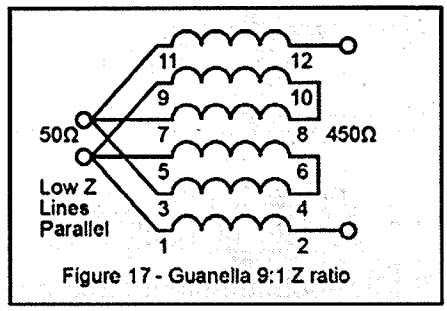


Figure 17 - Guanella 9:1 Z ratio

Figure 17: Schematic diagram of a 9:1 Guanella balun.

we have already covered the 1:1, 4:1 and 6:1. I may as well finish off with the 9:1 just for completeness. This may also help consolidate how these and other transmission line baluns really work as well.

Now Figure 17 does look a bit complicated but please take the time to have a good look at it. Recall how the 4:1 balun was simply two 100-ohm transmission lines on a toroid. Series connected on one side to give 50 ohms and parallel connected on the other to give 200 ohms. In Figure 17 we have three transmission lines: 1-3 on the left goes to 2-4 on the right – that is one transmission line. This 9:1 balun transforms 450 to 50 ohms. The geometric mean of these two impedances is

$$\sqrt{450 \times 50} = 150\Omega$$

So you would have to use the appropriate wire size and perhaps adjust the spacing to make three parallel lines each having a characteristic impedance (Zo) of 150 ohms. You can use the standard equation for calculating the Zo of a parallel line. The two wires could be held the correct distance apart by hot glue or sleeving before you wind them on the toroid.

On the right-hand side the three lines are in series to give 450 ohms. On the left-hand side the three 150 ohms lines are paralleled to give 50 ohms. If your three lines were not 150 ohms you would still have a 9:1 balun, it would just not be 450:50 – the 9:1 ratio would be the same but the input and output impedances would vary according to the characteristic impedance of the lines you use. By the way you can use coaxial cable to make these baluns. However, it is difficult to get a broad range of impedanccs with coaxial cable. The most common impedances for cables are 50,

continued on page 26

News from...

Waverley Amateur Radio Society – *90 years on*

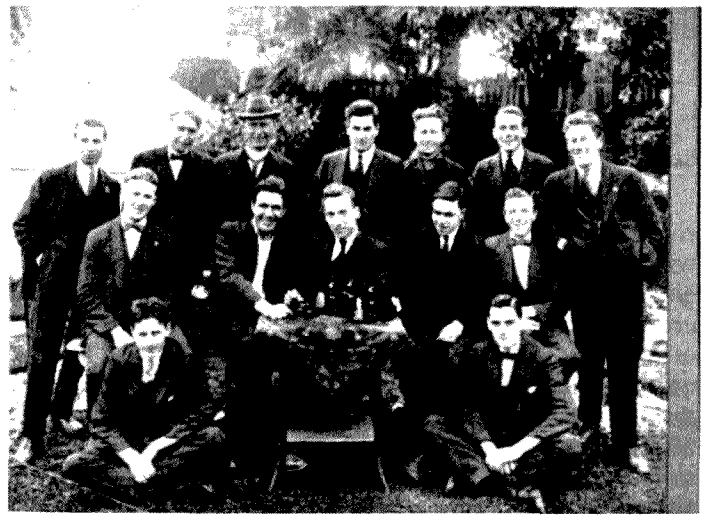
Simon Buxton VK2UA

The aim of this article is to summarise the history of the club, its current activities and to outline some of the events to celebrate its 90th anniversary in 2009.

The club was founded on 27 January 1919, following the end of WWI, by a group of 17 radio experimenters and enthusiasts living in the Waverley area. Three of these founders were among the 27 licensed radio experimenters in Australia in 1911.

Since that time the club has been continuously licensed, initially as N249 (licence 249 with prefix N for NSW), 2BV and from 1929, VK2BV, though it has not operated for periods of time including WWII when amateur radio operation was not allowed. In view of this, the club claims to be the oldest continuously licensed club in Australia.

The club has copies of the first licence application together with details of the transmitter and receiver proposed to be used which had to be supplied as part of the application. This and copies of all other material relating to Waverley held by the licensing authorities were supplied to the club in 1985.



Group of founding members in 1919.

Meetings up to 1954 were held weekly on a Thursday evening in the home of Frank Geddes, the club's first vice president, at 'Almont' 13 McPherson St, Waverley. This was also the location of the club station.

Waverley has never been a large organisation, having a membership between 15 and around 40 active members currently. Today the club is flourishing with permanent premises at Rose Bay.

The 1920s

Within a year of its founding, the club was able to obtain its first licence for a one valve receiver and a spark transmitter and was assigned a wavelength of 200 metres by the Navy department, who then controlled the use of radio. Copies of the specification and circuits of the equipment to be used and the club rules were required as part of the application submitted in May 1920. The experimental licence was granted in September that year, one of only 16 throughout Australia of which five were in NSW.

For a number of years the club had to nominate a trustee who was responsible for the club's adherence to licence conditions, one of which was that anything the club heard on air whilst experimenting was to be kept secret. In addition a copy of the club rules had to be deposited with the authorities. This responsibility was still in force after WWII when the club secretary had to complete a Statutory Declaration for this purpose. Experimental licences at this time cost £2 and were issued for a particular wavelength, the club being allocated 1000 metres in 1922.



Group of founding members in 1920.

Virtually every change in operating conditions had to be approved by the local radio inspector and in 1922 the club got into trouble when wishing to transmit music, which was not forbidden then, over the air to a dance hall in Coogee, an early demonstration of telephony and possibly the first amateur transmission of music in Australia. Permission was given for the club's receiver to be operated in the dance hall but apparently the club

DEPARTMENT OF THE NAVY.

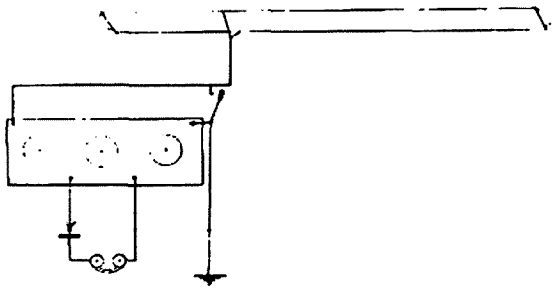
Details of Proposed Experimental Wireless Station
(RECEIVING ONLY).

1 Type

Type of Receiver

Earthing System

Sketch of Aerial and Diagram of Connexions.



Details of the club's antenna in 1920.

member making the transmission, R C Allsop 2YG, had not got approval to transmit from that area. As a result, the inspector recommended that the licences of both the club and Allsop be suspended for a period, but fortunately this view was not supported by his superiors after the club submitted its case.

Control of radio by this time had been transferred to the PMG who were very stingy, requesting that the club reimburse them for 8d for sending a letter with insufficient postage. After a second request, the club paid this in postage stamps. Also in 1922 the club's call letters were changed from N249 to 2BV (the term 'callsign' was not then in use). Call letters were in fact the licence numbers for receiving with licences being endorsed where transmitting had also been approved. At this period the club joined the Radio Association of Australia, which presumably was a rival to the WIA.

In May 1923 the club requested a change in wavelength to 400 metres and a few weeks later obtained approval to broadcast a concert from a church hall as another demonstration of wireless telephony. Apparently this was to a paying audience and the proceeds were shared between the club and the church.

By 1925, a certificate of proficiency was needed to obtain a licence, and the club's licence was not renewed until Gordon Thompson 2GT submitted his AOCP as evidence. In this year another change in wavelength, to 90 metres, was requested and granted with power limited to 10 W. Use of additional shorter wavelengths of 30 metres and 40 metres were approved the following year as public broadcasting had been introduced which occupied the longer wavelengths.

Details of Proposed Experimental Wireless Station
(RECEIVING ONLY).

Aerial Type—

2 wire 16 gauge 1 Strand.
30 feet
80 feet
Inverted L type

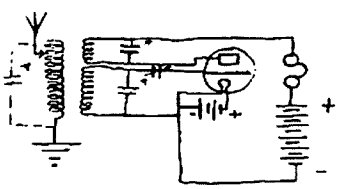
Type of Receiver -

Crystal and valve (oscillating
receiver)

Earthing System—

Counter poise.

Sketch of Aerial and Diagram of Connexions.



Details of the club's receiver in 1920.

DEPARTMENT OF THE NAVY.

Details of Proposed Experimental Wireless Station
(TRANSMITTING ONLY).

1 Type

ure and Voltage of Primary Power

240 volts 50 cycle

Transformer, Ratio of Winding—

Spark Gap, Type of

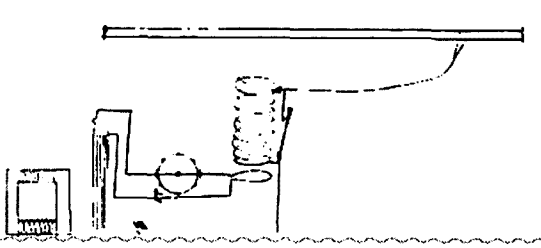
Particulars of Transmitting Oscillator

Capacity of Condenser—

Form of Coupling

Particulars of Earth Connexion

Sketch of Aerial and Diagram of Proposed Circuits.



Details of the club's proposed transmitter in 1920.



1925 QSL card.

The club became affiliated with the Wireless Institute of Australia in 1926 and has remained so ever since. Waverley was invited to set up a working radio station at the Sydney Town Hall for the week long Wireless Exhibition in May that year. Approval was eventually granted but not before both the club and the organisers had submitted the appropriate details.

The club requested permission from the PMG to transmit slow Morse and telephony on 230 metres for one hour every evening in 1927 but was refused on the grounds of risk of interference to broadcasting in a densely populated area. Either postal services or the PMG's clerical procedures were unreliable around these years, as several reminders were sent to the club requesting licence renewal or by the club to the PMG claiming no acknowledgement of their renewal payment. The 1928 licence permitted transmission on 125-250 metres with power again limited to 10 W.

The 1930s

The club's transmitters covered 7Mc/s, 3.5Mc/s and 1200 Kc/s in 1931 and it remained continually licensed throughout the 1930s. (These were the units in use at the time, well before the adoption of the SI system. Today we use MHz and kHz. Ed.)

During this decade there was a lot of interest in the possibilities of television and in 1933 two club members, Gordon Wells and Mr Pickering 2KI made what is believed to be the first Australian television transmission between Mr Pickering's home in North Bondi and the club rooms at Waverley. The technique was based on J L Baird's mechanical scanning procedure. Gordon Wells was club president for seven years but never became licensed. It was said that with his excellent technical abilities, he was too busy helping other members get their AOCP to have time to sit himself. He was made an Honorary Life Member of the club. In 1936 Mr Pickering donated his television equipment to the club who then applied to get approval for transmission in the 56-60 Mcs band using a special callsign. Approval was granted but the special callsign was denied and the club was prohibited from transmitting commercial material.

The WIA held an amateur exhibition at the Presbyterian Assembly Hall in 1936, where the first public television demonstration was conducted by Gordon Wells and Maurice Lusby. Gladys Moncrieff, a well known singer of the day, was the star and can claim to be the first woman to be televised in Australia.

The club continued operating their equipment until WWII was declared and all transmitting activities were curbed. Members still continued meeting with the Secretary Mr. J. Howes VK2ABS becoming interested in motion picture projection. He built a professional quality full size projector and sound system which was used to entertain members.

Post-War Activity

In 1946, following the end of WWII, the club requested that their licence be renewed and their old callsign re-allocated. This was done, but not until the Secretary had completed the Statutory Declaration regarding secrecy and the names of licensed members supplied. A warning was issued with the experimental licence pointing out that it did not permit the club to receive broadcasting stations unless a separate broadcasting licence was purchased. The club had to supply a copy of its constitution to the PMG. Amongst other things, the club required that new members be elected by secret ballot with 50% or more in favour of the applicant and that members be over 13 years of age and of British parentage.

At the end of 1946, an application was made to hold a field day, which presumably meant operating portable equipment and we were asked for more detail but no further correspondence can be found.

Official records over this period required inspection of the club equipment and these reports signified that operation of the club station was patchy for the next few years. For example the 1951 report stated that the club had no equipment and was not operating radios. In 1954 however the transmitter was described and 1955 represented the last days at 'Almont' with new official addresses of the club as Meymott St, Randwick and, from 1965, Birrell St, Bondi being supplied to the PMG until the 1970s. Inspection reports show that these addresses housed operating club equipment.

The club seems to have been dormant by 1970, but a few amateurs, including Phil Card VK2ZBX, Duane Foster VK2VE and Eric Van de Weyer, then VK2KUR, kept the licence active and decided to construct and operate a two metre repeater in 1975 with the callsign VK2RBV. A licence to operate was issued after endorsement from the WIA and it was installed at Clovelly and later moved to Bondi, continuing in use for a few years. During the 1980s the two metre and 70 cm repeaters at Paddington, VK2ROT, covering the eastern suburbs, was set up by the now defunct OTC Radio Club on the roof of their building.

1985 Rebirth

In the meantime the club licence had been renewed regularly by Duane Foster and in April 1986 a meeting was held to reconstitute the club and was attended by many eastern suburbs hams. Officers were elected and a new set of rules formulated. The club was able to obtain the use of the Scout Hall in Cooper Park Road, Bellevue Hill for its meetings and radio station. For at least the next two to three years the club operated a station from this site and hosted the annual Jamboree of the Air (JOTA) for local scouts but then had to move out at the request of the council who wanted the building demolished. For the next few years meetings were held in various rented locations around Bondi Junction.

In 1995 a request was made to the Scouts for use of part of the Rose Bay Scout Hall which at that time was unoccupied. This was granted as it meant that the building continued to be used and the upstairs area was made available for use by the club. Then, the club built up its operating station, provided audio-visual equipment and furnished the room for meetings.

Late in 1995 the club was honoured with a visit by Gordon Thompson, by then VK2AVT, one of the original founders, who fascinated members and visitors with his reminiscences of the early days of the club where he held a number of positions including those of Secretary and Trustee of the licence. He was made an Honorary Life Member and became a silent key in 2001, aged 96.



At a club meeting in 1995, showing Gordon Thompson VK2AVT at right, one of the founding members from 1919 and Ben Buxton VK2XUF our then youngest member who had just set up the club website.



VK2AVT from the previous photo (at left)



VK2AVT during the same (1995) meeting.



The clubhouse in 2003.



The clubhouse in 2005.



The clubhouse in 2007.



A club QSL card in 2008.



The club station in 2008.

At this time the Waverley website was created by one of our teenage members, Ben Buxton VK2XUF, which we believe to be the first ham radio club website in Australia.

The club still operates from Rose Bay but it now shares space with a Rover Scout group and in the past few years the NSW scouting body has done a considerable amount of work towards essential maintenance and improving the building so that it can provide a more functional venue and be available to other users.

The Waverley club currently has around 40 active members, a number of whom have joined following training for Foundation licences. The club has two regular meetings per month, a Saturday afternoon project day to carry out radio related activities and improve club facilities and a weekday evening meeting with informative talks and to discuss club affairs. In addition there is an annual auction in June as well as increased participation in contests and portable operation. Hosting JOTA for local scouts has occurred every October since moving to Rose Bay. Being close to the city, hams from overseas often drop in to the clubhouse when visiting Sydney.

Management of the Paddington two metre and 70 cm repeaters, VK2ROT, was taken over by the club a few years ago.

90th Anniversary Activities

A number of activities will occur to celebrate the club's 90th anniversary this year.

In November 2008, the ACMA allocated the club the special event callsign VI2BV90 for use over the period from 24 January to 1 February 2009. Other activities, not related to the special event callsign include a commemorative dinner and a special award over 12 months for contacts with the club, its officers and members. Award points depend on the station contacted, with multipliers based on the contact mode.

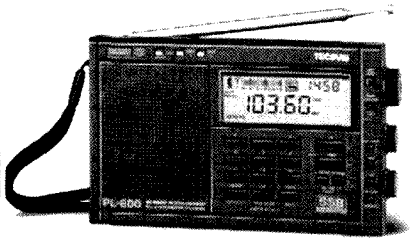
A commemorative DVD has been produced containing archive material including photos, video clips, historical and other documents as well as several versions of the club's website over the years. The anniversary has also created interest by club members in restoring or building replicas of early radio sets and additional on air activities are being investigated. Full details of the award or other anniversary activities are posted on the club's website or may be requested by post to the club at PO Box 634, Rose Bay NSW 2029.

The club's web site at www.vk2bv.org is kept up to date and has expanded over the past 12 years providing a large amount of information about Waverley's history, membership and activities.

Note: Simon Buxton VK2UA is the Publicity Officer for the Waverley ARS.

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Understanding and building the OCF dipole antenna

continued from page 21

75 and 90 ohms.

I hope that has put to bed once and for all that transmission line baluns, Guanella (current) and Ruthroff (voltage), are not transformers. Properly wound baluns such as those discussed are very efficient devices. Guanella (and Ruthroff) baluns are not conventional (mutually coupled) transformers. There is no primary or secondary. There is no turns ratio. There is no magnetic coupling between the windings. The Guanella balun described should have an efficiency of around 97% or more. So, almost no power is dissipated in the balun. The wire size matters. There is a right size and bigger is not better. Remember you are making two transmission lines on the toroid not a transformer. Because of the high efficiency (low loss), this balun should handle up to 1,000 watts of power.

As far as the forward power to the antenna is concerned there is no ferrite core. This is because we have transmission "through two transmission lines". There is no external flux around transmission lines. However, if the antenna is unbalanced, there will be leakage or common mode current flow through the balun. These currents are not transmission line mode currents. These currents will see a choking reactance presented by the balun and be stopped or significantly reduced. These leakage currents if extremely excessive can cause heating of the balun (but you have probably got a serious problem that you need to fix). Very high SWR can cause voltage dielectric loss and even flashover between the windings. Again this would indicate a more serious problem with the antenna.

Have fun with your OCF dipole.

ar

Editor's note: *Equally some modern rigs with semiconductor finals do not tolerate even mild SWRs. In fact circuitry is often included to reduce the RF drive should the SWR rise. If using such a transceiver, the use of an ATU might be worthy of consideration.*

World-leading solar power technology in outback Queensland

Don Marshall VK4AMA

Are you looking for an innovative and sustainable power supply with a capacity far more than your TX/RX can use?

The only downsides of this enticing project are that such an example of advanced technology is available only during daylight hours and that you must be in outback Queensland to use it.

This is a solar 'farm', due for operation early in 2009. Already its five mirrored dishes 13.7 metres across are visually impressive beside the Diamantina Development Road on the outskirts of tiny Windorah, population about 100, between Charleville and Birdsville.

Work began on the project in September 2007 to reduce the township's reliance on diesel-powered electricity generation, to reduce costs, and to reduce greenhouse gas emissions.

Each dish comprises 112 mirrors, each 1100 mm square. They are aligned north–south and are separated sufficiently to avoid shading at any time. They face and follow the sun so that as much sunlight as possible falls on the mirrors between sunrise and sunset. At the end of the day, they track back to the east ready for the next day.

The mirrors reflect and concentrate the sun 500 times onto a panel of high capacity photo-voltaic cells at a central point which convert the light into electricity for feeding into Windorah's town network.

The cells are expected to have an efficiency of 35 percent, claimed to be a world-leading efficiency in production technology, and contrasting with 10 – 12 percent efficiency from conventional flat plate PV cells.

Each dish is expected to generate about 35 kW of electricity, depending on season, time of day and cloud cover.

While the solar farm is fully producing electricity silently, the town's diesel generators will be switched off or operate at reduced output. At night or the relatively small time that the dishes are clouded, the generators will be brought back on line seamlessly to supply the town's full demand.

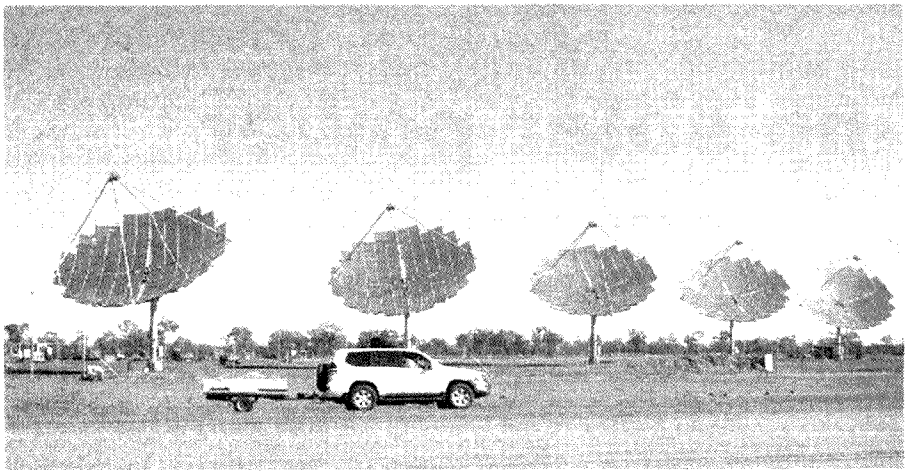
The system includes batteries to cope with brief cloud cover without having to start the generators.



A single dish, compared with the 4WD-mounted FAMPARC multiband mobile antenna.

Modern controls and communications equipment will allow for remote monitoring and control of the operation as well as manual operation on site.

The project is a trial by Ergon Energy to find a viable alternative to diesel powered generation for communities



The five-dish array of the solar farm under construction on the outskirts of Windorah in far western Queensland.

remote from the electricity grid.

Windorah was chosen as the test community for its suitable size and because it has a relatively new power station with interactive technology.

From 2009, the 'farm' is expected to generate about 360,000 kilowatt hours each year. This will save about 100,000 litres of diesel fuel which otherwise would have been used, and greatly extend the life of the generators.

Additional information can be extracted from the Ergon Energy website.

(Also see photograph on front cover)

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WYONG FIELD DAY 2009

8th February 2009

WYONG RACE COURSE

Presented by

CENTRAL COAST AMATEUR RADIO CLUB Inc.

Fees

Adult $10, Free Admission for 17 year olds and under.

Gates Open 6:30 am

The Bistro will be open at 7:00 am for early arrivals.

ATTRACTIONS

★ **TRADERS**

Selling Amateur Radio Equipment and Electronic Equipment

★ **EXHIBITORS**

Representing Amateur Radio Groups, Clubs and Emergency Organisations

Please note: *the Trader/Exhibitor area will be closed to the public until 9:30 am*

★ **FLEA MARKET**

Boot Sales, No Time Restrictions

★ ***SEMINARS*** ★ ***FOX HUNTS***

★ **LADIES' ACTIVITIES,**

Embroiderers Guild NSW and Central Coast Potters Society

★ ***RAFFLES***

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Further Information and Regular Updates on

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e-mail ccarc@ccarc.org.au

VK2

Tim Mills VK2ZTM
c/- arnews@tpg.com.au

A Happy New Year to all.

CLUBS

Most clubs took a break during January and now will be having their first meeting of the year in February. Please inform VK2 News of your schedule for the year: arnews@tpg.com.au

In a few days time the major VK2 annual event run by the **Central Coast ARC** will be held at the Wyong Racecourse – the Wyong Field Day. On site parking – if it is dry – and the main northern train line passes the venue with Wyong railway station a couple of hundred metres walk away.

Waverley ARS is just completing the operation of special event callsign VI2BV90 in commemoration of the 90th anniversary of its first meeting on the 27th January 1919. A QSL card is available for those making contact during the operation of VI2BV90. Waverley has maintained the call 2BV since its beginning. The club has had many addresses over the years in various parts of Sydney's Eastern Suburbs, the area which it serves. Today, the Club is well established in the Scout Hall in Vickery Avenue, Rose Bay, near the former flying boat base. They have a project afternoon on the first Saturday of the month and a meeting on the third Wednesday evening. An annual auction will be held in June. They operate 2 m and 70 cm repeaters at Paddington, with weekly nets. Contact Waverley via their web site vk2bv.org or Simon VK2AU 02 9328 7141.

Oxley Region ARC resumes meetings in February at the new SES Headquarters in Central Road, Port Macquarie. They hope to meet there for the monthly meeting on Saturday 7th February.

Taree and District ARC have their first meeting on 3rd February.

The Mid South Coast ARC has their first 2009 meeting on Saturday 14th February.

The Blue Mountains ARC has a node change on their repeater VK2RBM on ch 7050. The old node 6000 is heading for central Australia (Alice Springs) for a while. The new node number is 6366 and the new Echolink number is 63666 advises Erik VK2MAN. The first meeting of BMARC is set down for Friday evening, 6th February, with a possible talk on APRS. Their web site is www.bmarc.org

Well, the Coffs Harbour Expo put on by the **Mid North Coast ARG** is over for the year with planning no doubt under way for the next one. They have recently established a new 2 metre repeater in the Coffs area: VK2RCB on 146.750 with an access CTCSS tone of 123 Hz encode only. It serves the Coffs Harbour CBD and surrounding area. The web site www.mncarg.org

NSW WICEN will be at the Central Coast Field Day.

Northern Rivers has the Eden Creek Horse Enduro over the weekend 21 – 22 February and also the Paddle for Life Canoe Marathon over the ANZAC weeknd in April.

Contact WICEN via the Duty Operator 0408 397 217.

A 70 cm repeater commenced testing in Sydney's west at the start on the year: VK2RGW on 439.475 MHz advised Beth VK2AO. Email reports welcomed - beth.langley@bigpond.com

ARNSW

The AGM of the WIA NSW Division is scheduled to be held on Saturday 18th April 2009. The venue is yet to be confirmed, but if the fit out is finished, it will be in the new shed. A Council of nine is to be elected at the AGM and candidates are to be nominated and seconded by members and all must be financial at the time of nomination. The close of nominations and agenda items will be at 12 noon on Saturday 7th March at 63 Quarry Road, Dural with the Returning Officer, Peter VK2EMU. Nomination forms will be available on the ARNSW web site, by writing to P. O. Box 6044, Dural Delivery Centre NSW 2158, by telephone to the office phone 02 9651 1490, FAX 02 9651 1661 or by collection at the VK2WI site. VK2WI News will keep members informed.

By the end of 2008, work had started on the long awaited shed – barn – depot – really, it is just a storage facility. The earth works were carried out by Peter VK2JBP. Then the concrete slab was laid in two parts. The main shed slab is 24 x 9 metres. On the front eastern side is a 24 x 3 metre veranda slab. In mid January the erection of the shed kit was to commence. Some internal fit out will be taking place about now.

ARNSW has launched a new award advises Peter VK2EMU. It will be known as the VK2 Local Government Award. It will be for licensed amateurs and short wave listeners anywhere to contact or log amateurs in VK2. There are currently 152 local government areas in New South Wales extending from the Tweed Shire Council in the north to Bega Valley Shire Council in the south and Wentworth Shire Council in the west, as well as the large "unincorporated area" north of Broken Hill. Details were still being worked out as these notes were prepared. Peter advises the award will operate from the first of January 2009.

The operators of the VK2BWI slow Morse evening sessions took a well earned break from Christmas Day until the end of January. They always welcome assistance and if there are CW operators (anywhere) who would like to join the team, contact Ross VK2ER who has the Thursday session.

VK2WI

Some of the planned upgrades of the VK2WI facilities commenced late last year when a new circuit breaker switchboard was installed to replace the 35 year old wire fuse version. One of the members had spotted an almost new switchboard being aimed at a dump bin. He caught it on the way past and donated it to the Division. When the price list was checked, it had a trade value over $2.5k. What some people like to junk! Work is proceeding with refurbishing an AM transmitter to replace one of

the old AWA transmitters for one of the HF broadcast frequencies. Work is also underway, advises Mark VK2XOF, with new VK2RSY beacon transmitters for 2 m and 70 cm. Also one for 6 m, to free up the present transceiver unit currently being used for other duties.

VK2WI will conduct a Saturday evening news session on Saturday 7th February at 7.30 pm. This is for those attending the following day's Wyong field day. On the (Sunday) morning of the field day, the VK2WI 10 am transmission will depend on any broadcast team member/s not heading for Wyong being available. The Sunday evening broadcast will occur as normal.

During 2008 VK2WI News logged 6008 callbacks direct and via some relay stations. The break-up is 4362 in the morning and 1646 in the evening. The highest total for a day was 167 and the lowest 88. Highest morning was 120, lowest 60. The evening had a high of 40 and low of 22. VK2WI operates 12 frequencies in either session. The morning has 12 repeaters in the remote relay coverage and seven in the evening.

73 – Tim VK2ZTM.

VK3

Eastern Zone Amateur Radio Club Inc.

Chris Morley VK3CJK

Training

The Club held a training and assessment event in late November, with nine trainees attending both days of the event and some extra amateurs attempting assessments on the Sunday.

With so many candidates, Sunday was a long day, especially for the Assessor team!

The result was that eight candidates successfully completed the Foundation assessments; one was successful with the Regulations, one upgrade to Standard and one to Advanced.

We extend our thanks to all Assessors, Facilitators and helpers who assisted over the weekend. All enjoyed the barbeque lunch on both days.

Coming events

The February meeting will discuss techniques for use in hidden transmitter hunting, including construction of suitable small Yagi antennas for 144 MHz. This will be followed up in March with some actual transmitter hunts.

GippsTech2009

The Club is pleased to announce GippsTech2009. This year the main program will be held on Saturday July 11 and Sunday July 12. This event has a well-recognised reputation as the premier technical conference in VK, with its focus primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. In addition to the Conference, a Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Copies of the Conference Proceedings document from 2008 will be available for sale during this year's event. Previous years' Proceedings are also available.

Anyone who presented at GippsTech2008 and has not yet forwarded their material for the Proceedings volume can expect to receive a reminder from VK3KAI very soon!

The conference is held in Churchill about 170 km east of Melbourne.

Further details can be found at the Eastern Zone Amateur Radio Club web site at http://www.vk3bez.org/

Call for papers

Amateurs (and others with material to contribute) are invited to submit titles and outlines for topics to be presented at GippsTech2009. Presentation slots can be brief (5 – 10 minutes) through to one hour. Anything longer – you will need to justify!!

Presentations can be formal or informal, or display. We use a lecture theatre for the formal (and semi-formal) presentations. Displays are open during coffee/tea breaks and after lunch. Potential presenters are welcome to contact the Chair of the Organising Committee, Peter VK3KAI (vk3kai@wia.org.au), direct for further information or to suggest a topic.

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

As many readers of this magazine may be aware, in 1995 the GRES suffered a severe blow. The Barwon River flooded. A levee bank that was supposed to protect the club rooms from floods was breached and the club rooms were flooded to a depth of approximately two metres. They remained submerged for two days before the area could be drained, and, as can be imagined, the result was that the rooms had to be demolished. New premises were found and converted for use as a permanent meeting place.

Because of the rebuilding process some of the activities we engaged in were put on hold, but sadly other activities were forgotten. It is only in the last two years that we have again entered in field day competitions, a pastime that we once enjoyed on a regular basis. We also had barbeques and family days, and we will again be holding these during 2009 and beyond.

Something else that had been overlooked because of our rebuilding program was the award that we sponsored. We are now going to rectify this omission and once again sponsor the award the rules of which are as follows:

City by the Bay Award

A certificate will be issued by the Geelong Radio and Electronics Society to any licensed amateur radio operator who contacts the required number of

GRES members by radio.

The following conditions will apply to be eligible for the award.

Financial members of the GRES will be required to gain 60 points.

All other amateur radio operators will be required to gain 30 points.

Scoring is as follows:

Contacts with a GRES member fixed (home) station on 144 MHz and above	1 point
Contacts with a GRES member fixed (home) station below 144 MHz	2 points
Contacts with a GRES member where one or both stations are portable/ mobile:	
144 MHz and above	2 points
Below 144 MHz	4 points

The use of repeaters, satellites and IRLP are all eligible for scoring.

Any GRES member may only be contacted once.

Log book entries or QSL card confirmation is required by the award manager before a certificate can be issued.

To receive a certificate, forward all relevant documentation plus postage fee of $1.00 to:

Awards Manager
Geelong Radio and Electronics Society
PO Box 501
Belmont 3216

Members can often be found on 146.525 MHz Monday evenings and on 80 m Wednesday evenings. All members look forward to meeting up with you on air, and hope you enjoy making the required number of contacts with them to gain this award.

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

Spring VHF-UHF Field Day 2008

In spite of a self imposed handicap of dedicatedly consuming a quantity of red wine, VK3UHF, in the capable hands of Chas VK3PY and David VK3QM, once again acquired the top spot in the 24 hour multi operator class with a total of 6,012 points, putting them over 2000 points ahead of their nearest rival.

GARC in the Park

The Christmas party for the club organised by Jane VK3MJS and Vanessa VK3FUNY was originally planned for the Eastern Gardens in Geelong, where it actually started, but due to adverse weather conditions it finally ended up at the club house in Storrer Street.

Farewell party for Gavin VK3VTX

Gavin VK3VTX is moving to Flinders Island in the New Year and is in discussions with the ACMA on the VK7 callsign that will follow.



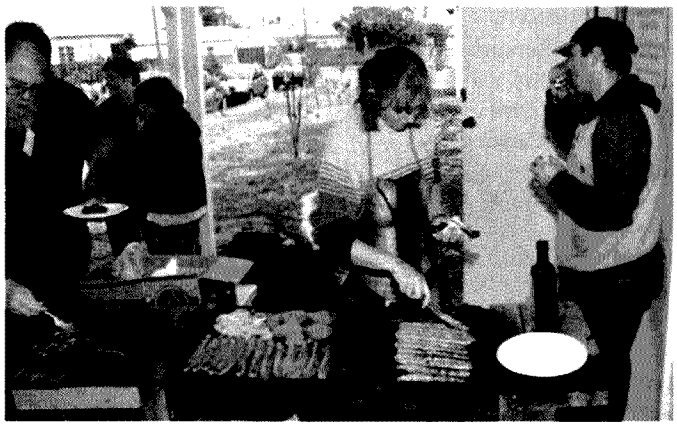
The 'mobile' cake supplied by Jenni VK3FGEN

In the meantime the GARC sprang a surprise farewell session for him at the club house on Friday 19th December.

Gavin will be missed by the club as a whole but in particular by those who frequent the VK3RGL repeater where you could almost certainly be guaranteed to hook up with him most days of the week, either from home or mobile.

Repeaters and Beacons

All the above are working correctly thanks to the tireless efforts of Ken VK3NW.



The BBQ outside the club house



Gavin receiving the cake from Jenni

News from



Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

Happy New Year

Welcome to another year; time flies when you are having so much fun. Well this year for me is to catch up on what I did not complete last year. So like a host of other amateurs/hams my New Year's resolution is to finish the projects that I have started and not completed before I start another. One being a licence upgrade (have to find more time to study), place towers vertical so my antennas can perform a little better (some basic antenna principles involved there), have my APRS and weather station functional, build the retaining wall for the XYL..... I think you get the general idea, my 2009 is going to be very busy as my list of uncompleted jobs and projects has only just begun, that I have to finish.

One priority item is to contact ALL Queensland Amateur Radio Clubs so you can be known to the rest of our Australian and overseas readers, to thank you for purchasing and reading our Australian *Amateur Radio* magazine. This would be greatly assisted by dropping me an email to vk4vkr@wia.org.au with your email, stories and pictures for publication.

Sunshine Coast Amateur Radio Club

The December meeting of SCARC was the Annual Christmas Party. About 50 club members and guests enjoyed the evening with a barbecue cooked by David VK4JMR and Mike VK4YFL, who did a marvellous job keeping the food coming to feed the hungry gathering. The first Prize of $50 in the raffle was won by Geoff VK4GWC, and the second prize of a bottle of wine was won by Bill VK4WB.

During December the Repeater group put in many long hours perfecting the recent installation of new repeaters at Wilkes Knob near Maleny, and linked the 2 metre repeater (146.850) at this site with the 2 metre repeater at Noosa (146.825); this now gives coverage from the Gold Coast to Gympie. Due to an unfortunate failure of the 6 m repeater, urgent repairs were made, and it is now functioning again on 53.700 MHz, and it got quite a few calls from stations in VK1 and VK2 during the recent period of good propagation. This repeater has in recent months been relocated to Wilkes Knob giving an excellent coverage. A local net is held on this repeater every Friday evening by our President VK4NL, anyone wishing to join in would be most welcome.

Sailing Hams

No, not Christmas hams that were left out too long over the holidays and grew wings, the following ham operators are currently at sea and sending position data by WinLink which eventually ends up in the APRS.

VK4HBV David onboard Sahula northbound - last report 20 December 2008 1406 UTC 07.45.00N 98.23.00E, Ao Chalong, 17 km SW Phuket, Thailand. Xmas/New Year at Phang Nga Bay. View sailing blog at http://www.sailblogs.com/member/sahula/

VK4FUU Ashley and Brenda onboard Ashymakaihken - last report 18 December 2008 0553 UTC 27.56.87S 153.25.45E, The Spit, Southport, QLD Gold Coast. Heading south.

Some people get to have all the fun!

Townsville Amateur Radio Club

TARC has an organised February:

TARC Management Meeting: Tue 3rd Feb from 7.30 pm at SES HQ Green Street, West End

TARC Project Night: Tue 10th Feb from 7.30 pm at SES HQ Green Street West End

TARC Social Evening: Tue 17th Feb from 7.0 pm at SES HQ Green Street, West End

Ann Renton Memorial Ladies Net Tue 24th Feb from 7.30pm on Townsville VHF Repeater.

Redcliffe and Districts Radio Club Inc

RADRC is keeping up with fire safety, with the work of Danny Rockett VK4FDHR and his employer London Fire and Safe Pty Ltd servicing the club fire extinguishers and donating a fire blanket as well as a CO_2 extinguisher. Have you checked your fire extinguisher lately or will you check it when it is too late?

If you wish to read a very technical and informative newsletter, contact Gerry (gerardb_adsl@bigpond.com) to be added to the mailing list or drop in on one of their club meetings, every Monday 1930 (local), corner Klingner Rd and Macfarlane St, Kippa Ring, or join in on one of the club nets Sunday evenings at 1900 K 146.925 MHz Redcliffe repeater VK4RRC and 1945 K 80m 3.618 MHz +/- QRM, VK4RC Net control.

Rockhampton and District Amateur Radio Club

The RADAR club is building a 23 cm beacon, with a show and tell at the December meeting and progress report. More details will be provided as the project continues. Many thanks go to Marcel VK4TMH and Frank VK4FLR for their fine work, time and effort.



23 cm beacon for VK4RAR (Rockhampton)



Mother Nature's power at an extreme

Summer season = bad weather

Hot summer days and thunder storms with damaging winds can sometime be an issue, remember to be safe with your antennas and towers, but even the (so called) best structures can be laid over by mother nature.

Thank you to the following for submissions for this month's VK4 AR column: Mike Little VK4YFL, Gavin Reibelt VK4ZZ, Gerry Bahre VK4UGB and Clive Sait VK4ACC. Would you like to see your name here?

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

Our year ended with the very successful Buy and Sell in the new venue, as reported in December, and an almost equally successful construction night.

This year we made van der Graaf high voltage generators!

As usual, Graham VK5ZFZ brought along a large collection of small components and some very clear explanation sheets and everyone set to on the task.

The photos illustrate the concentration required to make the van der Graaf generators and great was the joy when they were tested and sparks were seen. Lyndon VK5STC was the first to have his generator tested, and Elissa, the youngest member present, also had hers tested, along with many others. They worked! The photographer complained it was very difficult to actually photograph the spark!

The end of year dinner this year was a luncheon at the Mount Osmond Golf Course Clubrooms. The view from these



A group of members really concentrating. L-R: Trevor VK5TAW, Mark VK5AVQ and Ron VK5RV.



A completed van der Graaf generator

clubrooms is magic and added to the pleasure.

As well as the usual bottles of wine and boxes of chocolates handed out to the lucky ticket holders, two double dinner passes were given by the Mount Osmond management.

In January we will hold a picnic at the same venue as last year but normal meetings on the third Thursday of the month will begin again in February, at the Belair Community Centre. For more information please contact John VK5EMI or David VK5AMK, QTHR the callbook and telephone book.



Right: One of the lucky dinner prize recipients presented by the manager at the AHARS Christmas lunch

VK6

Keith Bainbridge VK6XH

As we start another year I would like to wish all Amateurs, SWLs and their families a Happy and Prosperous New Year for 2009.

As we get older the years seem to fly by, and suddenly we find we qualify as "old timers" with 25 years licensed and what do we have to show for it?

Well in VK6 we are lucky I believe as we are the targets still for overseas amateurs chasing the elusive Zone 29. Really Zone 29 should not be that hard to work on HF as there are many amateurs here in WA and that brings me to the point of this rambling.

I would like ALL VK6 amateurs to make the effort and get on air more often in 2009. There are many licensees here who I know have not been on air for many years so what can we do to remedy that in 2009?

I suggest the clubs in WA contact those amateurs they know have been inactive and try to get them back into the hobby and into the WIA ranks once again.

This is a time in the history of our hobby when we really need to swell the ranks. There are new amateurs getting their callsigns weekly I know, but what of those who have drifted away.

We need action in this area of the hobby and I believe clubs are ideally positioned to get this happening.

As I mentioned in the last column, I went down to Albany and met up for dinner with members of the Southern Electronics Group. It was a memorable feed at the Earl of Spencer, famous for their Pie and a Pint, it is huge!. Anyway the group is coming along with the re-installation of VK6RAL, the Albany two metre repeater, well under way and awaiting the cure of a few teething problems caused by co-sited equipment. The group has no formal meetings as such just on air get-togethers on a Wednesday night and dinner gatherings when they can be arranged. It was great to catch up with some old faces.

On the subject of new or revamped repeaters I believe the Bunbury area club is progressing well with the installation of two new Yaesu repeaters purchased recently with remaining club funds to replace the old WA Repeater Group machines on 2 m and 70 cm in the Bunbury area. As more info becomes available I will keep you all up to date.

The Northern Corridor Radio Group is also moving to replace its ailing 70 cm repeater with a new one, more will also follow on that as well and a new group in the Geraldton area is also hoping to have a new repeater on air soon.

Repeaters are the usual introduction new hams get to the hobby when first licensed so we need to have a good reliable system in place, and it is good to see the clubs helping out to provide them outside of the metro area.

Now a report from the North West

The amateur numbers dwindled by one last month with Fred VK6UMH relocating back south. Unfortunately this is the nature of the transient work force up here in the Pilbara. Fred was here for the Cape Lambert upgrade and was especially active in the evenings on his HT from the construction camp, talking locally and overseas on IRLP via our local repeater VK6RWR.

Active amateurs now hold steady at 4 in the Wickham, Roebourne and Karratha area with a few inactive operators still in the area.

Tropospheric ducting has been at a low for the last few months with no stations heard from Indonesia on the input or output of our local repeater since September. But I am sure this will not be the norm as we approach the

summer months. In extreme cases, we have to shut the repeater off for the day. So if you happen to be up this way and the VK6RWR repeater is off the air, it should only be for the day.

It is interesting to note that the Exmouth repeater VK6REX has not been heard in the Karratha and Wickam area for a couple years due to ducting. This was a yearly ritual but seems to be a non event over that last couple of years.

One last note, the VK6REX and VK6RWR repeaters have now been licensed for another three years to the end of 2011. Falling short of funds in the remnants of the old North West club account, a special thanks goes out to VK6ARW, VK6YA, VK6FABG, VK6BHY and yours truly VK6HV for the generous donations to keep these last two remaining coastal Pilbara repeaters on air.

73s

Steve VK6HV

Thanks Steve for an interesting report from up north, Grey Nomads take note of the repeaters available for your use.

VKCC WA branch!

I have been approached by Mirek VK6DXI representing members of the VKCC, the VK Contest Club, WA branch regarding the allocation of 2 x 1 callsigns for contest operation only.

Calls such as VK6A and VK6B and the like are at present not available to amateurs for contest operation, unlike just about every major country in the world.

He feels strongly, as do many of us, that the allocation of such callsigns to the contest groups and serious, recognised contesters in the hobby would be a huge bonus in bringing us into contention with the rest of the world. You only have to look at the Contest results list to see the 2x1 calls leading the charge.

As the allocation of callsigns is soon to be a WIA service, the many contesters among us would request that priority is given to achieving this allocation. After all there will not be 26 contest stations in every State so there will not be a huge demand, just a practical advantage to those taking part. Fingers crossed.

Finally the NCRG has just installed a new three element 40 metre beam so look out for big signals on the news re-broadcast in future (and in the contests of course!).

Albany repeater

On Friday January 2 Wes VK6WX, Bevan VK6VX and myself (VK6XH) headed down to Albany and installed the VK6RAL 70 cm repeater at Mt Clarence.

The installation went quite smoothly and the repeater is now on air.

The existing equipment was rearranged in the rack cabinet, then the KL450 repeater and 70 cm antenna duplexer was fitted in the rack.

Also installed was a 2 m/70 cm diplexer which allows both repeaters to operate off a single dual band co-linear antenna on the Mt Clarence tower.

Both the 2 m and 70 cm repeaters have been interfaced so they can be linked via a DTMF command if required.

Progress is being made to upgrade the Mt Barker 2 m repeater and this will be linked full time to the Albany 70 cm repeater.

The repeater frequency is 438.725 MHz (-5.00 MHz offset).

Reports of coverage for the new repeater are welcome.

73 from me and have a safe and DX plentiful New Year

Keith VK6XH

VK8

Peter Blackadder VK8HPB
vk8hpb@wia.org.au

Well I guess it is time I put fingers to the keyboard to tell the rest of Australia what is happening in VK8 land. At the moment it is hot dripping weather with an occasional storm to make things even stickier. The aircon makes it all that much more bearable; better crank it down another notch.

So here is a bit of news that has been happening around VK8 lately.

Assessor Training

November 8-9 Fred Swainston visited Darwin to conduct Assessor training for a number of intrepid Darwin Amateur Radio Club and Alice Springs ARC members. Saturday and Sunday mornings saw Mark VK8MS, Richie VK8RR, Spud VK8ZWM, Patrick VK8ZMX, Greg VK8HLF, Terry VK8TA, Gary VK8BN, Ron VK8NRI and Geoff VK8LDR from Alice Springs sit down and learn how to assess potential candidates sitting for their respective licences.

All now are fully fledged Assessors and Learning Facilitators and are keen to continue to hone their new found skills.

Yours truly missed out as I had to fly to Sydney in the wee hours of Saturday.

Many thanks go to Fred Swainston for taking the time to come to Darwin and to present the course.

Christmas Dinner

November 14th saw members of the Darwin Amateur Radio Club gather at the Free Spirit Resort for Christmas dinner.

A great night was had by all and my thanks to Spud VK8ZWM for taking over organising it at such short notice. I believe the venue chosen, although good, presented some problems on the night with a non-stop band playing LOUD music throughout the night, dampening the event significantly. The members are now all very good lip readers.

SEANET 2008 at Sabah, Malaysia

The DARC sent a large contingent to Sabah for this year's SEANET conference. Attending were Gary VK8GW and his wife Janice, Mark VK8MS and his wife Linda, Richie VK8RR and his wife Paula, and Andrew VK8AH (9M2XX) and his XYL attended from Singapore, where he is now working.

I believe it was good conference with Korea and China putting bids to hold it in their respective countries.

News from

Mark VK8MS turns out to be a very good karaoke singer and led the Malaysians in a sing-along; I also believe he leaves John Travolta for dead in the dancing. Well done Mark.

WICEN

WICEN (NT) applied for and received a grant from Emergency Management Australia. With the money received, WICEN purchased a portable repeater, antenna and a Clark push up mast.

The repeater has been running in test mode at the residence of Peter VK8HPB for the past couple of weeks to "bed it in" and it has operated successfully, albeit with some modifications to be done to make it a little better.

This repeater will be used by WICEN in the event of any emergency.

AGM

Monday 1st December saw the DARC have its annual general meeting where all positions were declared vacant. The following were elected to the positions to lead the club into the next year.

President	Peter Blackadder VK8HPB
Vice President	Greg Ryan VK8HLF
Secretary	Ron Innes VK8NRI
Treasurer	Mark VK8MS
Committee	Patrick Daley VK8ZMX
	John Goda VK8HF
	Gary Gibson VK8BN
Station Manager	Richie Chappel VK8RR

Lightning Project

DARC has been asked to participate in an experiment to help spot lightning strikes. Emeritus Professor Richard L Dowden from Dunedin NZ visited the club and asked if we could assist him in his project. The management committee have thought this a good idea and agreed to assist. Details are still to be finalised but we should be operational after Christmas.

VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

Central Highlands of Tasmania Hamfest

The Hamfest took place on Saturday 6th December up in the excellent Miena Community Hall facilities. The weather was great and the estimate was well over 150 attendees. The lucky door prize of a Yaesu 70 cm hand-held donated by Vertex Standard was won by Garry VK2UTC, the brother of John VK1CJ who also attended. There was great Hamfest pricing and I understand that traders were very happy with sales. Much pre-loved gear also changed hands. It took many people to make this event the success it was and thanks to all involved especially the coordinator Dave VK7KDO. I was told that there may even be a new XYL call sign from the Great Lake in the near future.



MC - Brian VK7RR (with Mic) & Hamfest Coordinator Dave VK7KDO with lucky door prize draw help from the Nicholas clan.

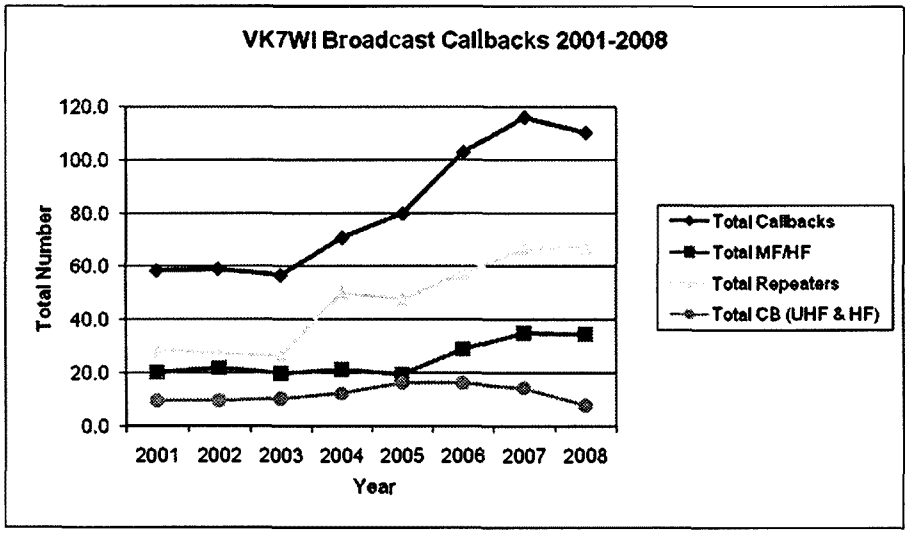
Records Tumbling

On 24th November 2008, Rex VK7MO at Green Hills near Stanley with APD receiver and Joe VK7JG and Alvin VK7NDQ on Mt Horror with Rex's new light transmitter, completed a one way 209 km optical cloud bounce contact using WSJT. Congratulations to all involved.

There has been much activity from VK7 using the Weak Signal Propagation Reporter (WSPR) application from Joe Taylor K1JT. Bob VK7KRW, on Friday 31 Oct, had a two way contact with Richard N2JR in Virginia, USA on the 80 m band, with a distance of 16300 km running just two watts. Then Dick VK7DIK made a contact with Joe K1JT over a distance of 23351 km on 40 m using just five watts. Congratulations to all involved – DX using QRP – very impressive!

VK7 Regional News Broadcast Statistics

The 2008 VK7 Regional News broadcast year had good and bad news. In summary there was a 1% increase in repeater callbacks, a 1% decrease in MF and HF callbacks and a 46% decrease in HF & UHF CB callbacks. On the surface this looks bad; however this could be a result of the many new Foundation licensees who are now on the amateur bands. Total callbacks for 2008 have dropped 5% over 2007 to an average of 110.3 callbacks per week, which resulted in a total of 5623 callbacks in 2008. More



Total VK7 Regional News Callbacks from 2001-2008

detail can be found at: http://reast.asn.au/archive.php#stats

North West Tasmanian Amateur Radio Interest Group

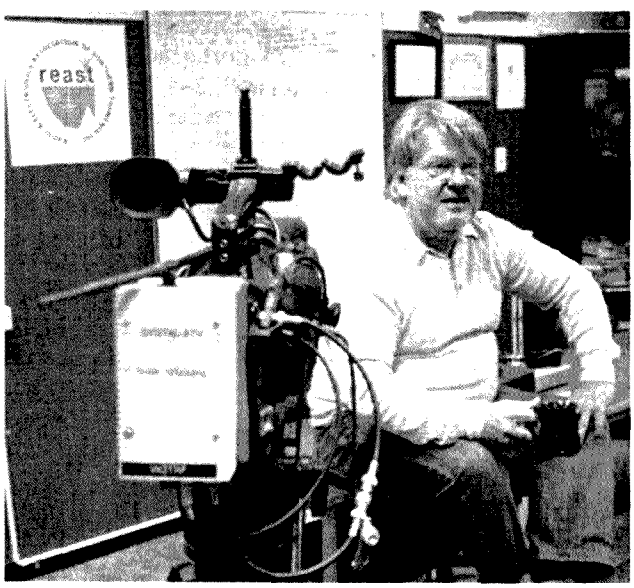
Congratulations to Brian VK7FAYE and John VK7FOXX for gaining their Foundation licences. Welcome to the airwaves.

Northern Tasmania Amateur Radio Ciub

In November there was a great presentation from Ian Hart from the Tasmania Ambulance Service on technology and methods of communications, and a fascinating insight into the Service's response to the Beaconsfield Mine accident of 2006. Thank you, Ian. Congratulations and welcome to Kerry VK7FKEK the North's latest Foundation licensee. NTARC's December meeting was a good social affair at Myrtle Park making for a good finish to 2008.

Radio and Electronics Association of Southern Tasmania

Congratulations to Michael VK7FROG, Ashby VK7FASH, Scott VK7FRRT, Ross VK7FROS and Paul VK7FPAH who have all gained their Foundation licences. Welcome to the airwaves. ATV is alive and well in Hobart with each Wednesday night featuring video presentations from a wide variety of sources. UHF TV: 444.250 MHz, just below SBS, with a directional antenna pointed toward the Queen's Domain should get you a signal. REAST's December presentation was on Digital and DX ATV by Jack VK2TRF/7. He gave a fascinating talk, both live and out via ATV, on his vast exploits with DX ATV and his Digital ATV experimentation on 23 cm. Thanks Jack and congratulations to you and your team in VK2 for these outstanding records. IRLP Node 6739 is back on air on VK7RAD/RHT thanks to Ben VK7BEN.



Jack VK2TRF and his Digital ATV Presentation

ar

Silent Key

Leon Durkin VK7JP "Durk"

Aged 83, Leon Durkin, died on December 5. Husband of Trix (dec) and father of Vaughan, Kim and Leonie, Leon was a life member of the Burnie Fire Brigade and the Wireless Institute of Australia. Ken VK7KH recollects the Radio Club on the North West coast where they used to meet at Syd Medford's garage in Mount Street in Burnie and Leon was an active member. Leon was responsible for the installation of mobile radios in the Burnie Fire Brigade vehicles and Ken remembers him trying out different mobile whips for their vehicles. He was very successful in this and Leon was given a Life membership of the Fire Brigade. He worked for the PMG department just behind the Burnie Post Office and always wore a grey dustcoat and being a small man was easily recognised. Those were the days of Doug Fisher VK7AB and Dr Ian Pearson and of course Syd VK7SF in the old AM days which Ken well remembers.

Vale Leon.

Ken VK7KH and Winston VK7EM

A new

Amateur Radio Wiki

has been started and can be found at

http://www.amateur-radio-wiki.net

We are looking for writers of articles suitable for this website.

The intention is that it will become an online encyclopaedia for hams.

Please log into the site, register and start writing!

Tim Roberts VK4YEH QTHR.

DX - News & Views

John Bazeley VK4OQ
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
Email john.bazley@bigpond.com

Well I wonder what the next 12 months has to offer in the way of DX? How many of the 'top most wanted' list will be activated? Some we already have had advance notice – Desecho Island and Marion Island. Other DXpeditions already planned and publicised include for January: XU, A35, CN8, TU, ZD8, S2, E44, TS7, C5, 8Q7, 6W, HK0/SA. February: 3D2, T2. March: C6, VK9L, YJ, J6. Undoubtedly there will be others as time progresses.

The other controversial 'discussion' is how different will conditions be this time next year? Let us hope we are in for a pleasant surprise! But there are times when conditions are a lot better than we think! This was well and truly illustrated during the recent CQWW CW Contest at the end of November when conditions appeared to be very poor but with Contest activity the amount of DX that was worked was extraordinary. Even 15 and 10 metres opened up. I have mentioned before that we all tend to 'forget' the IARU Beacon Service, which is there 24 hours a day, 7 days a week, and is an excellent tool for 'seeing' what bands are open NOW. Often the beacons will be really strong from, say JA, but not a single JA station on the band! I guess everyone waiting for everyone else to call CQ!

So here is a little information on some of the activity that we can expect in the next few weeks.

S2: Korea DX Club members Kim 6K5YPW, Kang DS2AGH, Lee DS2BGV, Kim HL3QP, Choi HL5FUA and Yoon 6K2AVL will be active from Dhaka, Bangladesh on 7-12 March. They plan to operate (callsign TBA) on 160-10 metres CW, SSB and digital modes, with three amplifiers, verticals and beam antennas. Suggested frequencies are:

Band	CW	SSB	Digi
160 m	1822	-	-
80 m	3515	3795	-
40 m	7015	7095	-
30 m	10115	-	-
20 m	14015	14195	14082
17 m	18075	18130	21082
15 m	21015	21295	-
12 m	24895	24950	-
10 m	28015	28460	28100

QSL via HL5FUA. Logs will be available at http://dxpedition.co.kr

Good to hear again from Bill VK4FW regarding the forthcoming DXpedition to VK9LA: March 23rd 2009 to April 3rd 2009.

After much negotiation, we have now secured a second operating site on the island. This has meant that we are now taking extra operators and extra equipment and will also have an extra day for the operation.

The full list of operators is: K5YY, N2OO, N2OZ, SQ8X, SQ9DIE, SV2KBS(YL), VK1TX, VK3HJ, VK3QB, VK4IO, VK4VCH (YL), VK5CP, VK5PO, VU3RSB, W5SL and myself VK4FW. This well balanced team will keep seven complete stations active on SSB, CW and RTTY. We will operate on all bands from 6 m through to 160 m.

Antennas consist of mono band Yagis for 6, 10, 15 and 20 m bands, low band verticals, WARC Yagi, wire arrays for the low bands and a special antenna for 160 m. The total weight of all the equipment will exceed 2.5 tonnes and will cost some $5000. We would certainly appreciate donations to help offset this cost, which can be made on line at the web site: http://www.odxg.org/vk9la.htm

April 1st has been set up as the special night to make sure that all VK, ZL and general Pacific stations get into the log on 80 m. The time and frequencies are CW 3.507 at 08.45 Z followed by 3.555 at 09.30 Z.

Canadian amateurs will be allowed to use four special prefixes between 1st January and the 28th February: VA can use CF, VE can use CG, VO can use CH, VY can use CI. This is to commemorate Galileo's first use of an optical telescope and to promote the International Year of Astronomy.

Jim ND9M is now back on Diego Garcia (AF-006), Chagos Islands until April 2009. He was active as VQ98JC through to the end of 2008, after that he will use VQ9JC. Expect him to be QRV in his spare time, typically at 1200-16.30 UTC (from Sunday to Thursday) and at 1200-17.30 UTC (Fridays and Saturdays). Occasional overnight operating will allow him to remain QRV until 0100 UTC. QSL via ND9M.

The TC-Special Wireless Activity Team will be active from a number of lighthouses around Istanbul as follows:

17-18 January TC2SLH Sile (TUR-046)

24-25 January TC2ALH Anadolu (TUR-014)

21-22 February TC1ALH Ahirkapi (TUR-056)

21-22 March TC1RLH Rumeli/Turkeli (TUR-053)

04-05 April TC2FLH Fenerbahce (TUR-021)

Stations contacting four or more lighthouses will receive the "Istanbul Lighthouses On The Air Award" (details to be announced on http://tcswat.tripod.com/)

A log search for the recent **A5100A** operation from Bhutan is now up and running at http://www.f5lmj.net/a5100a.htm, along with a photo gallery, MP3 files and other information.

QSLs for ZL7/SP5EAQ. Jacek SP5EAQ, who operated as ZL7/SP5EAQ from the Chatham Islands back in October 2007, states that if you are still waiting for a direct card, please contact him (e-mail address at qrz.com), as it looks like a few envelopes have got "lost" at his local post office.

Starting February 22nd, look for **Jan DL7JAN**, who will be QRV from Praslin Island (AF-024), Seychelles. He will be operating as S79JF on 7 through 28 MHz on CW, SSB, RTTY and possibly PSK31 until March 6th. QSL via DL7JAN either direct or via the bureau.

Nick 5N/LZ1QK has been QRV from near the capital Lagos since early October. Activity so far has been on CW only on 7 through 28 MHz. He is there on a work assignment and went home to Bulgaria for the Christmas holidays. He is expected back in Nigeria around the 1st or 2nd of January. LZ1QK told George W8UVZ that he has "a pretty good low band antenna" but is only running 100 watts. He has tried 80 metres but has

only had luck with EU so far. When Nick takes his Christmas break back home he will be getting an Acom-1000 amplifier, thanks to the help of LZ1JK. Also he will work on a new antenna for 80 and 160 metres. QSL cards for 5N/LZ1QK go via QSL Manager LZ1CL, Vassil Shatarov, P.O. Box 185, Plovdiv 4000, BULGARIA.

Sigi DL7DF will be on holiday with his XYL on Zanzibar Island (AF- 032), Tanzania from February 3rd to 13th. He will be QRV as 5H1DF on 1.8 through 28 MHz on CW, SSB, RTTY and SSTV. He will be running an amplifier and an 18 metre high low band vertical. He will also have available an R7 vertical. He has a Web page at www.dl7df.com/5h/index.html QSL via DL7DF.

Finally some information on those readers particularly interested in IOTA:

REFERENCE UPDATE of the 2007 Edition of the IOTA Directory

AF-104	7X	Mediterranean Sea Coast East group (Algeria)
AS-185	XV	Gulf of Tongking South group (Vietnam)
AS-186	YK	Syria group (Syria)
AS-193	HZ	Farasan Islands (Saudi Arabia)
AS-199	VU	Andhra Pradesh State South group (India)
NA-229	VY0	Nunavut (Hudson Bay - Quebec Coast) North East group (Canada)
NA-234	KL	Islands of Four Mountains (Alaska)
NA-243	OX	Greenland's Coastal Islands North East (Greenland)
OC-283	P2	Tauu Islands (aka Takuu Islands) (Papua New Guinea)
OC-284	P2	Nukumanu Islands (Papua New Guinea)
SA-098	OA6	Arequipa/Moquegua/Tacna Department group (Peru)

Good luck in the pile-ups.

Special thanks to the authors of *The Daily DX* (W3UR), 425 DX News (I1JQJ) and *QRZ.DX* for information appearing in this month's *DX News & Views*. For interested readers you can obtain from W3UR a free two week trial of *The Daily DX* from www.dailydx.com/trial.htm

ar

Spotlight On SWLing

Robin L. Harwood VK7RH

Sleep in Heavenly Peace? Forget it!

Another year has arrived and again peace is so very far away. As I am compiling this, Israel and the Hamas terrorist group are again at each other's throats in Gaza. There are thousands of civilian casualties on both sides and there is unwillingness to cease hostile operations, despite repeated calls from the United Nations Security Council. This action was launched just days prior to the inauguration of Barack Obama as the 44th President of the United States of America. I have noted a marked increase in those odd numbers stations, allegedly run by the Israeli Mossad after being almost silent for many weeks. Some of these transmit on channels adjacent to the 40 and 80-metre amateur allocations and identify with three letter callsigns such as Charlie India Oscar or Alpha Mike Zulu, usually with a computer-generated female voice.

MI5 or 6 also employed these numbers stations to send traffic to agents throughout the world but they have significantly reduced their operating hours, as I believe that better platforms now exist to disseminate traffic than shortwave radios. The Cubans still send numbers traffic to agents, usually on CW. A very strong signal was easily heard here in Australia for many years; operating between 6870 and 6950 around 1300 Z. Numbers stations are now used by narcotics traffickers and mimic the Spooks but are easily tracked by law enforcement authorities.

As predicted, the Austrian Radio closed their foreign language section yet did not vacate shortwave. They are now relaying the domestic networks in German, similar to what Radio Australia does with Radio National. Lithuania also unexpectedly closed down their shortwave senders. The latter has been relaying Hobby broadcasters plus Teheran but now has ceased broadcasting over HF. The VOA in Washington also stopped programming in Ukrainian on the same date, just as another crisis erupted between Russia and Ukraine over gas supplies.

As I have been commenting, confusion reigns supreme with regard to digital broadcasting. The Americans opted for Ubiquity, a standard only available in the States. Known simply as IBOC, this application was designed both for the AM and FM broadcasting allocations. Now doubts have emerged that it is viable commercially and over 50 stations turned off IBOC on the MW band around Christmas with more expected to join them. Apparently the financial meltdown has hit hard into sales of commercial receiver models.

Also DRM has not taken off as the proponents would have wished. Receivers are far too pricey and there are too few broadcasters using this mode. The BBC World Service and DW have opted for a joint DRM platform for English programming from a sender in the UK. There are too few people listening to DRM to make it feasible.

The other Digital platform, known as DAB1, is primarily available only in the UK, whilst the rest of Europe has apparently switched it off. This is the standard that is going to be employed here in Australia as from midyear.

Unlike here in Australia, the Americans are going to switch off their analogue TV signals in mid February. Millions of Americans are blissfully unaware that they will require a digital converter and have ignored coupons to buy digital decoders. In Australia, we will be phasing out analogue by 2013.

Well that is all for now. Take care and good listening!

Robin L. Harwood VK7RH.

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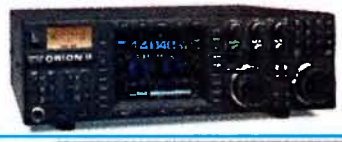
• No PC required at the rig to operate remote! • Delivers live receive AND transmit operation from anywhere in the world from wideband Internet access! • A simple GUI written for the OMNI-VII downloadable free or latest GUI source code can be downloaded to DIY • Three built-in filters at 20 kHz, 6 kHz, and 2.5 kHz Optional Collins mechanical filters at 500 Hz and 300 Hz. • Filters are auto or manual. • 37 built-in DSP filters. • Transmit 6 - 160 metres, 100 watts Receive from 500 kHz -30 MHz continuous plus 48 to 54 MHz • SSB, CW, AM, FM, Digital modes. • 17 selectable transmit bandwidths. • RX EQ and TX EQ in 6 db/octave filters selectable in 1-dB steps • DSP Noise Reduction, auto or manual notch. • QSK CW has adjustable rise and decay times, hard or soft key options

Orion II

First independent test data on ORION II, released 16 April 2006: "Noted receiver guru Rob Sherwood NC0B of Sherwood Engineering now ranks the ORION II as #1 of all HF amateur radio transceivers ever tested for close-in dynamic range, dating back to the 1970's. The original ORION is now listed as #2 overall to the ORION II ".

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Christine Taylor VK5CTY

We greet a New Year

ALARA hopes you all have a great Festive Season and are bright-eyed and bushy–tailed ready for all the activities of a New Year.

2008 ended with some special ALARA lunches. The Gold Coast had a gathering which resulted in the setting up of a new conference station on EchoLink. A number of the YLs wanted to 'talk' to each other but were more comfortable with a computer headset than with a microphone attached to the radio.

The station can be found under the name of ALARA or on node number 286905 through IRLP. Remember you have to be a registered amateur to use EchoLink or IRLP and you have to be 'recognised' by sending your licence information through the internet.

This is the information sent from Pam VK4PTO about their Christmas party and the conference server:

At our Gold Coast Club Xmas Party last night, where 9 ALARA members were present, I was presented with a Certificate and a key to "ALARA EchoLink Conference Server" by Paul Van der Weegen VK2EX.

Paul and his XYL Sheralyn VK2LUV created this Conference Server for the ladies of the ALARA group, to have control of and use as we see fit, hoping that it becomes the meeting place for YLs everywhere, and promotes the involvement of ladies into this hobby.

We have photos of the VK3 girls and the VK5 group celebrating. Christmas is a time to get together and enjoy the friendship we share.

In VK5 our YLs were again involved with the Scouting activities

Through SCRAG the communication section of Scouts in VK5 Jenny VK5FJAY and Jeanne VK5JQ found themselves at Morgan in December, operating the radios for the "Super Splash" arranged to give Scouts some water sport experience. The YLs handed out radios and batteries and kept in communication with the various groups.

Weather wise, it was sprinkling on and off but not enough to put a dampener on the fun. Jeanne and her OM Keith VK5OQ set up the station in the local caravan park on the Saturday. Jenny and her OM Kevin VK5AKZ came up early on Sunday morning and helped out during the day, staying to pack up at the end.

A good time was had by all.



The VK3 November Lunch was actually their Christmas celebration lunch.
Back Row. L-R: Jenny VK5ANW, Pam YL of VK3AMN, Muriel, Margaret from the WIA, Susan VK3ANZ, MicheleVK3FEAT, Susan VK3FXXX, Michline VK3FMGE, with OM Peter VK3KG.
Front Row. L-R: Margaret VK3FMAB, Pam VK3NK, Pat VK3OZ, Diane VK3FDIZ, Helen YL of OM VK3DLR, Jean VK3VIP, Cristina VK3FCRS, and Wendy, Muriel's sister.



The VK5 Christmas group. Jean at this end on the right of the table wearing her Christmas hat.



Tina's patchwork quilt

YL International Meet in Australia in 2012

When Christine VK5CTY recently went to the YL International Meeting in Africa she was asked to convince ALARA to host a YL International Meeting in Australia. She brought the idea back with her and we had a meeting of VK5 girls to see if there was any support for the idea. We took the idea to the committee and after many emails with everyone's shared ideas the committee has decided to host the YL International Meeting in 2012 in Adelaide. It was also decided that the 2011 ALARAMEET would be postponed until 2014 to allow more to attend the YL International Meeting.

Tina VK5TMC has agreed to coordinate the Meet. Current thinking is that the meet would be at the end of April or beginning of May 2012. This would be late autumn and usually quite nice weather. The Meet will be centred on Adelaide with as little overlap of the Murray Bridge ALARAMEET as possible. Tina will try to arrange trips to the Barossa Valley, Hahndorf, and for the international girls we would visit a wildlife park. For a venue, the idea is to try to stay in the Glenelg area to offer a variety of accommodation, 5 stars to caravanning. Every attempt will be made to keep the Meet affordable to allow everyone a chance to meet the international girls.

There will be an optional trip at the end of the MEET to go to Darwin on the Ghan with a stop in Alice Springs to go out to Uluru. This will be a fairly expensive trip, probably in the order of $4000 to $5000 each but we hope some of the VKs will take up the offer, along with some of the International visitors. The train representatives have been very helpful and if we got 48 people to do this we would have our own lounge carriage and dining carriage.

Tina will be attending the YL International Meet in 2010 in Munich. This will enable her to see what is done and to see a bit of Europe. Tina will also be at the Dayton Hamvention this May to promote our Meet.

The committee would like feedback on our decisions. You can email Tina at: vk5tmc@optusnet.com.au, speak to any committee member, or if you want the message passed on to every committee member email Jenny VK5ANW at wolfenden_p@bigpond.com

Tina looks forward to seeing many of you at our 2012 YL International Meet.

Tasmanian ALARAMEET postscript

Many of you sent pieces of fabric to me to make a quilt that was part of the Special Effort. I thought you might like to see the end product. This was the first quilt I had ever finished. I am still working on the first quilt I started but it takes quite a while to hand-stitch a king size quilt, three years and stitching. I was pleased with the end result and my OM said it was too nice to give away! Kathy the ZL who won it had just redecorated and said she had a perfect place to hang it.

Tina Clogg VK5TMC

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Peter Paradigm VK2TXT
email: coordinator@amsat-vk.org

AMSAT-Australia or AMSAT-VK?

It would seem that there is still a little confusion regarding how AMSAT is represented in Australia, and how membership to AMSAT-Australia works. I believe that this has come about due to the amalgamation of AMSAT-Australia and the Ozsatgroup.

AMSAT is represented in Australia by the AMSAT Coordinator, as a member of the Technical Advisory Committee (TAC) of the Wireless Institute of Australia. The appointment of the coordinator is made by the Board of the WIA on the recommendation of the existing members of the TAC.

When you join AMSAT-Australia, you are actually becoming a member of the AMSAT-VK Yahoo group. All of the activities of AMSAT in Australia are conducted via this Yahoo group. This is the same way in which the former Ozsatgroup was run.

Prior to the amalgamation of AMSAT-Australia and the Ozsatgroup, membership of AMSAT-Australia entailed joining the AMSAT-Australia mailing list, and more recently an email list. From July of 2008, the Ozsatgroup and the old AMSAT-Australia list were merged into a single Yahoo group called AMSAT-VK.

In essence, the way in which AMSAT-Australia operates has not changed since 1986, since the days of the original newsletter. The main difference is that the AMSAT-VK group now offers its members a range of shared resources. Instead of being a one way mail out, the group is set up as an internet based forum/discussion group. The group also includes a photo library, a shared file area, a group calendar, a couple of databases and a polling facility. The members of AMSAT-VK also participate in two monthly nets.

When the AMSAT Coordinator needs input from the group or the members of the group wish to make any changes, messages are posted to the message board, and sent out to people via their email. In some cases, we utilise the polling facility and put questions to the vote.

The group does not have a committee and is managed entirely under the Yahoo group model and terms of service. In AMSAT-VK all members are equal. With a few necessary exceptions, every member has the ability to create and edit the content of the site. For example, if a member wishes to create a photo album relating to a particular interest or activity, the member can just go ahead and create it. Obviously, the content must be relevant to the group's focus and must not include offensive or copyrighted materials.

Another example would be in the use of the shared calendar. Members are encouraged to use the calendar to setup skeds and to let people know about events, such as planned DXpeditions!

Simply put: "Our aim is to keep AMSAT-VK open to all, to be inclusive, to be friendly, helpful and to be an enjoyable experience for all our members". We have five basic group rules, which really only summarise and simplify the Yahoo terms of service.

All messages posted to the message board or directly to other members must comply with the Yahoo terms of service.

- No SPAM of any kind is permitted. This includes repeatedly promoting any website, including those URLs which some people append to their "email signatures", with the exception of the URLs of AMSAT-VK, other AMSAT organisations and the Wireless Institute of Australia.
- No commercial advertising or promotions are permitted. However, members are free to recommend products and services, when answering the questions of others.
- Messages should always be courteous, and you should reframe from 'flaming' others. Any form of harassment, discrimination or general nastiness will not be tolerated.
- Messages should relate to our shared interests in amateur radio, space communications and related fields.

We are a friendly bunch of people who enjoy sharing and promoting our hobby and the group is run in an informal, politics-free manner.

As AMSAT-Australia is completely run via the AMSAT-VK group; there are no fees and once you have joined you can remain a member of the group as long as you like. AMSAT-VK is funded by displaying advertising on our website and by the occasional kind donations of our core members.

From now on, in order to avoid further confusion, we shall refer to both AMSAT-Australia and the AMSAT-VK Yahoo group as AMSAT-VK, bringing us in line with most other AMSAT organisations around the world.

Six-monthly review operational AMSATs.

AO-7 AMSAT OSCAR 7

Launch Date: November 15, 1974. This is not a typo, say again, 1974. That is 34 years and still counting!

Status: Operational depending on the amount of sunlight

Current Mode: Listen before transmitting

Uplink: 145.850 to 145.950 MHz CW/USB Mode A

432.125 to 432.175 MHz CW/LSB Mode B

Downlink: 29.400 to 29.500 MHz CW/USB Mode A (1 W PEP)

145.975 to 145.925 MHz CW/USB Mode B (8 W PEP)

145.975 to 145.925 MHz CW/USB Mode C (2 W PEP)

Beacon: 29.502 MHz CW

http://www.amsat.org/amsat-new/satellites/sat_summary/ao7.php

AO-16 PACSAT

Status: Semi-operational

Current Mode: V/U

Uplink: 145.900 MHz FM Voice

Downlink: 437.026 MHz SSB Voice

Broadcast Callsign: PACSAT-11

http://www.amsat.org/amsat/sats/n7hpr/ao16.html

Note: This bird is in its last months of operation before it is expected to shutdown. Operators are encouraged to continue to listen out for AO-16 and to report any activity. More info in six months!

GO-32 Gurwin TechSat-1B

Status: Operational but difficulties are reported occasionally.

Current Mode: V/U

Downlink: 435.225 MHz FM (9600-baud FSK)

Uplinks: 145.850 FM, 145.890 FM, 145.930 FM, 1269.700 FM, 1269.800 FM, 1269.900 FM

Broadcast Callsign: 4XTECH-11

BBS Callsign: 4XTECH-12

http://www.iarc.org/techsat/techsat.html

NO-44 PCSAT

Status: Operational only in full sunlight

Current Mode: V

General Usage Uplink/Downlink: 145.827 MHz 1200 Baud

Special Usage Downlink: 144.390 MHz 1200 Baud

http://pcsat.aprs.org/

SO-50 SAUDISAT-1C

Status: Operational.

Current Mode: V/U

Uplink: 145.850 MHz FM - 67.0 Hz PL tone

Downlink: 436.795 MHz

Mode and Antenna Polarization:

V: Linear

U: Linear

To switch the transmitter on, you need to send a CTCSS tone of 74.4 Hz.

The order of operation is thus: (allow for Doppler as necessary):

1) Transmit on 145.850 MHz with a tone of 74.4 Hz to arm the 10 minute timer on board the spacecraft.
2) Now transmit on 145.850 MHz (FM Voice) using 67.0 Hz to PT the repeater on and off within the 10 minute window.
3) Sending the 74.4 Hz tone again within the 10 minute window will reset the 10 minute timer. Users have reported difficulties recently.

AO-51 ECHO

Status: Voice Repeater

Current Mode(s): FM Repeater - V/U

Analog voice downlink: 435.300 MHz FM, 435.150 MHz FM, 2401.200 MHz FM

Analog voice uplink: 145.880 MHz FM, 145.880 MHz USB, 145.920 MHz FM,

AMSAT-Australia

AMSAT Co-ordinator: Paul Paradigm VK2TXT, email coordinator@amsat-vk.org

Group Moderator: Judy Williams VK2TJU, email secretary@amsat-vk.org

Website: www.amsat-vk.org Group site: group.amsat-vk.org

About AMSAT-Australia

AMSAT-Australia is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-Australia uses the Yahoo group AMSAT-VK as the primary point of contact for those interested in becoming involved in amateur radio satellite operations.

If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-Australia monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-Australia HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

1268.700 MHz FM - 67Hz PL tone
Digital Downlinks: 435.150 MHz FM 38k4 Digital, PBP, 435.150 MHz FM 9k6 Digital, Pacsat Broadcast Protocol
2401.200 MHz FM 38k4 bps, AX.25
Digital Uplink: 145.860 MHz FM 9k6 Digital, Pacsat Broadcast Protocol
1268.700 MHz FM 9k6 PBP Digital
Beacon: 435.150 MHz
Mode and Antenna Polarization:
T: Linear
V: Linear
U: TX A (usually digital)LHCP
TX B (usually analog) RHCP
L: Linear
S: Linear
Broadcast: PECHO-11
BBS: PECHO-12
http://www.amsat.org/amsat-new/echo/

VO-52 HAMSAT

Status: Operational
Current Mode: U/V - Indian Transponder
Indian Transponder:
Uplink: 435.220 to 435.280 MHz LSB/CW
Downlink: 145.870 to 145.930 MHz USB/CW
Dutch Transponder:
Uplink: 435.225 to 435.275 MHz LSB/CW
Downlink: 145.875 to 145.925 MHz USB/CW
Indian Beacon: 145.859330 MHz CW
Dutch Beacon: 145.860 MHz 12 wpm with CW message
Mode and Antenna Polarization:
V: LHCP
U: RHCP
http://www.amsat.in/hamsat.htm

Note: FM operations on VO-52 are permitted for QRP / hand held. In India, SSB gear is not very common and the operations team have suggested that FM operators can use this bird. If you are planning to work FM, please make way for SSB stations. It would be best to arrange a sked in advance, as VO-52 is rarely used in FM mode over VK and ZL.

CUBESATS

Like the mail, the Cubesat projects just keep coming. They come and go so fast that you need to be in constant touch with a reliable internet source to keep up. They are usually launched in batches of a half-dozen or so from a single launch. Because of this it is always a few weeks before they separate sufficiently and accurate tracking data is available. The monitoring of the telemetry from the Cubesats is becoming a specialised operation requiring close attention to the most reliable and immediate sources. The following information has been gleaned from the AMSAT-NA bulletin board and various other AMSAT sources. Check the very latest information regarding the Cubesats before planning your monitoring sessions.

CO-66 Seeds II

Status: Operational
Beacons 437.4850 MHz CW, 437.4850 MHz AX.25
Mode U Digitalker: 437.4850 MHz FM
Mode U SSTV: 437.4850 MHz

CO-57 CubeSat

Status: Operational
Beacon: 436.8475 MHz CW
Telemetry: 437.4900 MHz AFSK 1200 bps
Callsign: JQ1YGW
http://www.space.t.u-tokyo.ac.jp/cubesat/mission/V/

CO-58 CubeSat

Status: Operational - CW Beacon only 437.4250 MHz AFSK 1200 bps
Callsign: JQ1YGW
http://www.space.t.u-tokyo.ac.jp/cubesat/mission/V/

DO-64, Delfi-C3 (classified as a nano-satellite)

Status: Semi-Operational
TLM beacon 145.870 MHz
Transponder 435.53 – 435.57 MHz up. 145.88 – 145.93 MHz down.
This bird is now operational in SSB Voice.

CUTE1.7+APDII CubeSat

Status: IN ORBIT
Downlink: 437.475 MHz 9k6 Packet
Telemetry heard in VK

COMPASS-1 CubeSat

Status: IN ORBIT
Downlink: 437.275 MHz CW 437.405 MHz Packet
Telemetry heard in VK

SEEDS CubeSat

Status: IN ORBIT
Downlink: 437.485 MHz
Telemetry has been heard in VK

INTERNATIONAL SPACE STATION – the ARISS project

Catalog number: 25544
Launch date: November 20, 1998
Status: Operational
Current Mode: Occasional Voice/packet Digipeater
Expedition 15 crew:
Commander: Fyodor Yurchikhin RN3FI
Flight Engineer: Sunita Williams KD5PLB
Flight Engineer: Oleg Kotov

Digital/APRS:

Worldwide packet uplink: 145.990 MHz FM
Worldwide packet downlink: 145.800 MHz FM

Voice:

Region 1 voice uplink: 145.200 MHz FM
Region 2/3 voice uplink: 144.490 MHz FM
Worldwide downlink: 145.800 MHz FM
SSTV TESTING: watch for updates on the BB.
Worldwide Reported Downlink: 145.800 MHz FM

Crossband Repeater:

Repeater Uplink: 437.800 MHz FM
Repeater Downlink: 145.800 MHz FM

Mode and Antenna Polarization:

V: Linear
U: Linear
Callsigns:
German: DP0ISS
Russian: RS0ISS, RZ3DZR
USA: NA1SS
Packet Mailbox: RS0ISS-11
Packet Keyboard: RS0ISS-3
Digipeater callsign: ARISS

Official ARISS Webpage:
http://www.rac.ca/ariss
ISS Daily Crew Schedule:
http://spaceflight.nasa.gov/station/timelines/

Future goodies

Phase 5a - Marburg University's Mars Mission

This is not an amateur radio satellite in the same sense as any so far. First mooted in 1996, it will be the culmination of over a decade of activity at Marburg University. With the close involvement of AMSAT-DL, it will probably contain an amateur radio beacon designed to test the resolve of even the most advanced amateur station operators. A precedent was set in early December 1996 when a 70 cm beacon on board the Mars Global Surveyor was detected by amateurs when the spacecraft was three weeks into its trip to Mars and five million kilometres from Earth. Technology used by radio amateurs has improved since then but P5a will still be a mighty test for any amateur station. No launch date is available, see P3e.

Status: Design Phase
http://ticket-to-mars.org

Phase 3e - advanced High Orbiter

Proposed Launch Date: Was originally listed as late 2007, which is obviously a bit ambitious. This project will go ahead, if a little late, as it is in a way a test platform for some systems to be flown on P5a. P3e launch is on indefinite hold due to the lack of funds. Estimated cost to launch is $US20 million!

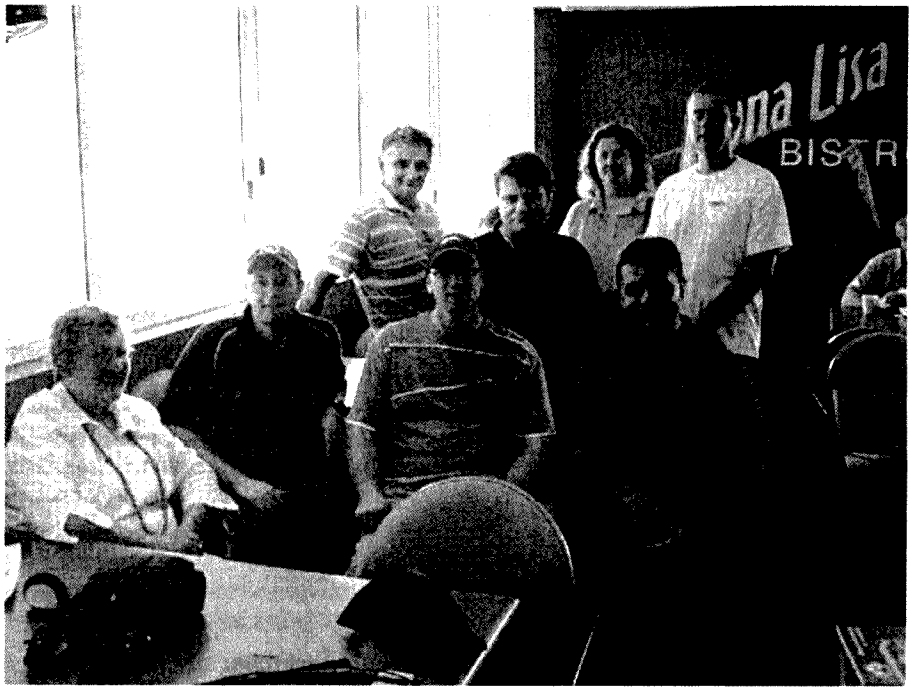
Status: Under Construction
http://www.amsat-dl.org/p3e/

AMSAT-Eagle - advanced High orbiter

Proposed Launch Date: Early/Mid 2009, which is probably rather optimistic.

Status: Although the proposed launch date is listed as 2009, Eagle is still very much in the design stage. No launch has been negotiated at present. Funding is also behind schedule.

http://www.amsat.org



AMSAT-VK members at Wyong 2008. Back: Geoff VK2ZAZ, Paul VK2TXT, XYL (Lisa) and Peter VK2CPH. Front Judy VK2TJU, Adam VK2YK, Mark VK2FBAI, and Mal VK2MAL

Central Coast Field Day 2009

Just a quick reminder that AMSAT-Australia will be at this year's Wyong field day. Pop in and say hi, and put faces to the voices you hear on the birds. Hopefully we will be conducting a satellite demonstration, assuming there is a suitable pass through the day.

Also, we shall arrange a time when the members of AMSAT-Australia can meet as a group. See the group site for details – "group.amsat-vk.org".

ar

Over to you

How to report Pirates to ACMA

The Australian Communications and Media Authority is responsible for investigating complaints about radiocommunications interference.

An article in the December edition of your publication, 'Pirates on the two metre band' outlined a recent investigation carried out by ACMA, resulting in the location of a device causing interference and subsequent action to have the device switched off.

While ACMA is pleased to receive the positive feedback from the author of the article, I would like to clarify one aspect of the article to ensure that your readers can effectively communicate interference matters to ACMA.

Rather than contacting an individual officer, the best way to contact ACMA to report interference issues is by:

Calling 1300 850 115;

Sending an email to interference@acma.gov.au; or

Lodging an interference form on ACMA's website: http://www.acma.gov.au/WEB/STANDARD/pc=ACMA_FORMS_SPECTRUM#Interference

I would appreciate it if you could bring this information to the attention of your readers.

Allan Major
Executive Manager
Regulation and Compliance Branch
Australian Communications and Media Authority

Contests

Phil Smeaton VK4BAA

Contest Calendar for February to April 2009

Feb	7/8	Mexico International RTTY Contest	RTTY
	7/8	RSGB 160 Metres Contest	CW
	7/8	WW Peace Messenger Cities Contest	CW & SSB
	14	Asia-Pacific Sprint	CW
	14/15	CQWW RTTY WPX Contest	RTTY
	21/22	ARRL International DX Contest	CW
	20/21	Russian PSK WW Contest	PSK31
	27	CQWW 160 Metres Contest	CW
Mar	7/8	ARRL International DX Contest	SSB
	14/15	RSGB Commonwealth Contest	CW
	14/15	**John Moyle Field Day**	**CW/SSB/FM**
	21/23	BARTG RTTY Contest	RTTY
	28/29	CQWW WPX Contest	SSB
April	4/5	SP DX Contest	CW/SSB
	4/5	EA WW RTTY Contest	RTTY
	11/12	Japan International DX Contest	CW
	11/12	Yuri Gagarin Intl. Contest	CW
	18	Holy Land DX Contest	CW/SSB
	18	TARA Skirmish Digital Prefix Contest	PSK
	18/19	YU DX Contest	CW/SSB
	25	**Harry Angel Sprint**	**CW/SSB**
	25/26	Helvetia Contest	CW/SSB
	25/26	SP DX RTTY Contest	RTTY

A belated Happy New Year to all for 2009. I hope you had a very merry Christmas and that Santa brought you everything that you wanted.

A new year and possibly a new sun spot cycle for us to play with? We will see. The jury is still out on whether the cycle has started, with a few reports of spots often appearing on the Net, only to be followed with a downbeat reaction.

ARRL 10 m contest

Activity in this part of the world was somewhat low for this one - not too surprisingly I suppose. David Burger VK2CZ was again at the controls of VK8AA and managed a creditable 348 QSOs claimed for 11,800 points in the Single Operator High Power SSB section. This is an increase in claimed QSOs from 2007 for David, up from 259. The heady days of 2001 must still be echoing in David's mind however, as the QSO tally for that year was more than 1300. A few hearty souls reported spasmodic activity with VK, JA and ZL during the contest, but nothing too hectic to raise the pulse rate it would seem. It is a hard time for 28 MHz as the days of working the world on a bit of damp noodle are still quite some time ahead of us.

Russian DX Contest 2008 Results

Congratulations to the following stations for entering the contest and gaining creditable positions overall.

Callsign	Section	QSOs	Total
VK7GN	SOAB-CW	721	1242984
VK8AV	SOAB-CW-LP	84	22034
VK4TT	SOAB-CW-LP	40	8910

VK2 VKCC Meeting

A great night was had by all at the Blue Gum Restaurant in Hornsby, North Sydney. The recent CQWW CW Contest topped the discussion agenda and contemplation of possible DXpeditions by a few of the members. Tomas presented a slideshow of some of his adventures on Norfolk Is (VK9N), Macau (XX) and a mysterious location south of Sydney from which he had to abandon an operation due to forces unknown. It was probably a visit from the Bundy Bear.

VK6 VKCC Meeting

The chaps in Perth also tore themselves away from the radio to meet and discuss contesting over a meal and a small libation. With the local NCRG station coming nicely to fruition as regards an impressive antenna system now coming on-line, I suspect that the meeting was arranged by those VKCCers that did not actually attend the meeting but used the station for themselves once the others had been lured away by the promise of pies and beer. Sneaky, but effective!

CQWW CW 2008 Contest

The following VKCC teams participated in CQWW CW 2008 – a record this year with 3 teams!

VKCC Bushrangers	VKCC Blue Tongues	VKCC Devils
VK2BJ	PA0MIR	9M2CNC
VK2BPL	VK4TI	VK2IA
VK2GR	VK6LW	VK4EMM
VK2IM	VK7GN	VK6DXI
VK2NU	VK8AV	

Reports from around VK suggest that 40 m was in reasonable shape for the contest, with 10 m, 15 m and 20 m being a little bit quiet at times – especially 10 m of course! Short Path openings to the US were evident but seemingly localised as some VKs could hear others happily working the US but the US stations themselves being inaudible. Conditions were reported as generally awful from VK2, with 20 m being cited as the worst offender with no LP EU in the afternoon, no LP US in the morning, no short path EU in the late evening, no AF and very little SA. One could be forgiven for wondering if the coax was connected! 15 m was alive for those with a sizeable beam and full legal power output, but for those with 100 watts and a dipole, the band was a bit less forgiving. Another station in VK2 had a ball and worked the bands up to over 2600 QSOs, so a polarised propagation pattern in VK2 this year. Some nasty electrical storms around Sydney might not have helped of course.

VK4 seemed to do a bit better, in that most traffic appeared focussed on the 15 m, 20 m and 40 m bands. This was a similar picture to VK6, with QSOs also featuring mainly on these three bands.

Alek VK6APK entered the contest for his first time in a CW contest. Talk about a baptism of fire – and sitting in Zone 29 too! The LF bands worked well from VK6, allowing Alek to pump-up his DXCC credits a bit more.

Being 'spotted' on the packet network used to be the source of a good run of QSOs with stations vying for your attention. This is not always the case nowadays, with nobody listening for the control station and just calling and calling regardless. It is often quicker to S&P than wrestle with the pile. I have done this previously, with many stations calling with no etiquette at all and ruining the fun for everyone. A good pile will keep operators interested but just tuning around may make the operator nod off! Some nice signals reported on 160 during the contest but it takes time to work them so a well judged QSY to top band is often required in order to maximise the payback for changing bands and dropping the QSO rate in order to grab some wanted multipliers.

A few VK stations have reported being called at a speed far above their CQing speed. The majority were from EU and experienced callsigns. They got little response from the VK station concerned and had to QSY to find the zone multiplier from elsewhere. Maybe, they will learn their lesson for next year!



VK2 VKCC Christmas Meeting. Photo by Tomas VK2CCC.
From Left to Right they are: Vlad VK2IM (AEA) Dave VK2NU, Paul VK2BPL, Tomas VK2CCC and Berndt VK2IA.



VK6 VKCC Christmas Meeting. Photo by John VK6NU.

WPX Rule changes for 2009

Many of the changes are minor and are intended to modernise the rules, make things simpler, or to be more in alignment with other CQ contests. I have taken a sample of some of the rule changes but as regards the use of Skimmer, the WPX Contest will follow the lead of the CQWW Contest when used by single operators. The rule will be identical to the CQWW Contest, in that: "QSO alerting assistance of any kind (this includes but is not limited to: packet; local or remote Skimmer and/or Skimmer-like technology, and the Internet) places the entrant in the Single Operator Assisted category."

Additional clarity has been provided on exactly how the band changes are counted for MS operations, in that "Only one transmitter and one band permitted during any 10-minute period. Exception: One - and only one - other band may be used during any 10-minute period if - and only if - the station worked is a new multiplier. Ten-minute periods are defined as starting with the first

logged QSO on a band. Logs with excessive violations of the 10-minute rule will automatically be reclassified as multi-multi. The log must indicate which transmitter (run or multiplier) made each QSO. Use a separate serial number sequence for each band." The ruling does not elaborate as to what the interpretation of the term "excessive violations" actually is – but maybe there is more on the WPX website.

The club competition rules are now identical to the CQ WW Contest except that a secretary letter listing all eligible club members is not required. Single-band entries must submit all QSOs made, so that QSOs made on other bands during the contest but not submitted in the log entry does not penalise the other entrants for 'Not In Log' QSOs that result from the missing log entries.

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au. See you on the bands.

John Moyle Field Day Contest 2009

Presented by Denis Johnstone VK4AE/VK3ZUX

14 - 15 March, 2009

0100 UTC Sat - 0059 Sun

I wish all entrants good luck, and look forward to hearing you on air during the contest!

N.B. new email address: jmfd2009@wia.org.au and you can check out latest information at http://www.wia.org.au/contests/

Overview

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.
2. The contest takes place on the third full weekend in March each year, and runs from 0100 UTC Saturday to 0059 UTC Sunday, 14-15 March 2009.
3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.
4. Single operator portable entries shall consist of ONE choice from each of the following (e.g. 6 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital, or All modes;
   c. HF, VHF/UHF or All Bands.
5. Multi-operator portable entries shall consist of ONE choice from each of the following (e.g. 24 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital, or All modes;
   c. HF, VHF/UHF or All Bands.
6. Home and SWL operator entries may only be either 24-hour or 6-hour, all modes, all bands.

Scoring

7. Portable HF stations shall score 2 points per QSO. CW only contacts to score 4 points per QSO for contacts with either home or portable stations. Digital modes score 2 points per contact.
8. Portable stations shall score the following on 6 m:
   a. 0-49 km, 2 points per QSO;
   b. 50-99 km, 5 points per QSO;
   c. 100-149 km 10 points per QSO;
   d. 150-299 km 20 points per QSO;
   e. 300-499 km 30 points per QSO;
   f. 500 km and greater, 2 points per QSO.
9. Portable stations shall score the following on 144 MHz and higher:
   a. 0 to 49 km, 2 points per QSO;
   b. 50 to 99 km, 5 points per QSO;
   c. 100 to 149 km, 10 points per QSO;
   d. 150 to 300 km, 20 points per QSO.
   e. 300 km and greater, 30 points per QSO.
10. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance such as the 6-figure Maidenhead Locator must be supplied.
11. Home stations shall score:
    a. Two points per QSO with each portable station.
    b. One point per QSO with other home stations.

Log Submission

12. For each contact: UTC time, frequency, station worked, RST/serial numbers sent/received and claimed score. (VHF and above location of other station and distance showing the Lat/Long or Maidenhead Locator to 6 figures for the station worked.)
13. Logs must be accompanied by a summary sheet showing: call sign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used, and a signed declaration stating "I hereby declare that this station was operated in accordance with the rules and spirit of the contest and that the contest manager's decision will be accepted as final". For multi-operator stations, the names and call signs (legible) of all operators must be listed.
14. Paper logs may be posted to "John Moyle Contest Manager, 27 Laguna Ave, Kirwan 4817 QLD". Alternatively, logs may be e-mailed jmfd2009@wia.org.au, vk4ae@wia.org.au or to vk4ae@hotmail.com, or snail mailed via the WIA Contest Manager JMMFD, P.O. Box 2042 Bayswater, VIC 3153. The following formats are acceptable: Microsoft Excel or Word, ASCII text or electronic log programs such as VK Contest Log (VKCL). Logs sent by disc or e-mail must include a summary sheet and declaration, but the operator's name (legible) is acceptable in lieu of a signature. Logs must be postmarked no later than 17 April 2009.

Certificates and Trophy

15. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Additional certificates may be awarded where operation merits it. Note that entrants in a 24 hour section are ineligible for awards in a 6 hour section.
16. The President's Cup, a perpetual trophy held at the National Office, will be awarded to the Australian portable Club station with the highest score entered in the 24-hour, All modes, All bands section. "Club station" for this contest means a club affiliated with the WIA. The winning Club will receive an individually inscribed wall plaque as permanent recognition.

Disqualification

17. General WIA contest disqualification criteria, as published in Amateur Radio from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

Definitions

18. A portable station comprises field equipment operating from a power source, e.g. batteries, portable generator, solar power, wind power, independent of any permanent facilities, which is not the normal location of any amateur station.
19. All equipment comprising the portable station must be located within an 800 m diameter circle.
20. A single operator station is where one person performs all operating, logging, and spotting functions.
21. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
22. A multi-operator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.
23. A multi-operator station may use only one call sign during the contest.
24. Multi-operator stations may only use one transmitter on each band at any one time, regardless of the mode in use.
25. Multi-operator stations must use a separate log for each band.
26. Logs submitted electronically can use a separate Excel worksheet for each band linked to a summary sheet. A typical example is shown at http://www.wia.org.au/contests which can be copied and adapted for the individual use of either a single or multi operator station.
27. A station operated by a club, group, or organisation will be considered to be multi-operator by default.
28. None of the portable field equipment may be erected on the site earlier than 28 hours before the beginning of the contest.
29. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to three years.
30. Phone includes SSB, AM and FM.
31. CW means Morse code.
32. Digital modes include any other mode other than the above (Rules 30 and 31), such as RTTY, Packet, PSK31, etc. Another station may be worked only once per period on any digital mode: i.e. you cannot work them on RTTY, then PSK31, then packet - only one digital contact allowed, regardless of mode, per period (see rule 35).
33. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz. Note: On 50 MHz, the region below 50.150 has been declared a contest free zone, and contest CQs and exchanges may only take place above this frequency. Stations violating this rule will be disqualified.
34. Cross-band, cross-mode and contacts made via repeaters or satellites are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.
35. Stations may make repeat contacts and claim full points for each one. For this purpose, the contest is divided into eight consecutive three-hour blocks: 0100-0359, 0400-0659, 0700-0959, 1000-1259, 1300-1559, 1600-1859, 1900-2159, 2200-0059 UTC. If you work a station at 0359 UTC a repeat contact may be made after the start of a new block providing they are not consecutive, or are separated by at least five minutes, since the previous valid contact with that station on the same band and mode.
36. Stations must exchange ciphers comprising RS(T) plus a 3 digit number commencing at 001 and incrementing by one for each contact.
37. Portable stations shall add the letter "P" to their own cipher, e.g. 5900IP.
38. Multi-operator stations are to commence numbering on each band with 001.
39. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.
40. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

If anyone wishes to contact me privately to discuss rules etc, my home phone number is (07) 4723 4229, and my snail mail and e-mail address is as shown in the Log Submission section above.

Denis Johnstone (VK4AE/VK3ZUX)

Spring VHF-UHF Field Day 2008: Results

Contest manager: John Martin VK3KM

The number of logs received for the Spring Field Day has increased each year for the last four years, and this year's event set another new record with a 60 per cent increase in logs compared with this time last year. The Summer Field Day has traditionally seen more activity than the Spring event, but this year's activity also breaks the previous Summer Field Day record.

According to the rules, if the winner of Section A also enters section B, his log is excluded from Section B. That was the case this year, so the total becomes 71 logs from 67 different entrants.

It is good to see a notable increase in the numbers of both portable and home stations, with a number of callsigns appearing in the list for the first time. The geographic spread of stations is also increasing, although there are still gaps in VK6 and VK7.

Microwave activity was static, or a little lower than usual in some areas. But it is noteworthy that this year's event saw the first Field Day contact on the 47 GHz band. At the other end of the spectrum, some of the 6 metre scores were much higher than usual, and this suggests that we will see greater use of this band in future events.

Now on to the results. Congratulations to Tim Dixon VK5ZT for winning Section A with a marathon roving effort. For Section B, the prize goes to Gavin Brain VK3HY. In the multi-operator sections, the 24 hour winners were VK3UHF (operated by Chas VK3PY and David VK3QM), and the 8 hour winner was VK3XPD, operated by Alan VK3XPD and Michael VK3KH. The top home station was Matt Hetherington VK2DAG.

The next Field Day will be the summer event, to be held over the weekend of January 17 and 18. Will it set another new record?

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	47 GHz	TOTAL
Section A: Single Operator, 24 Hours												
VK5ZT	Tim Dixon	PF85,86,87,94,95,96,97	130	555	900	912	-	-	-	1160	-	3657
VK4OE	Doug Friend	QG62, QG63	57	450	645	576	460	-	-	550	210	2948
VK5ADE	Stuart Cameron	PF85, 86, 95, 96	104	390	660	808	-	-	-	890	-	2852
VK1DA	Andrew Davis	QF44	51	747	655	464	290	-	-	240	-	2447
VK3ECH	Rob George	QF24	95	516	625	640	-	-	-	-	-	1876
VK5AKH	Andrew Hall	PF94, PF95, PF96	88	369	560	280	-	-	-	570	-	1867
VK5OQ	Keith Gooley	PF85, 86, 95, 96	76	300	425	560	-	-	-	210	-	1571
VK5AR	Alan Raftery	PF94	32	537	505	208	-	-	-	-	-	1282
VK2VRS	Russell Simon	QF68	-	273	505	496	-	-	-	-	-	1274
VK5LA	Andrew Williss	PF84, PF85	58	426	530	-	-	-	-	-	-	1014
VK4HEC	Ewen Cameron	QG52	24	441	250	-	-	-	-	-	-	715
VK2AMS	Mark Swannack	QF68	31	279	290	-	-	-	-	-	-	600
VK1XYZ	Michael Wagner	QF44	25	264	155	-	-	-	-	-	-	444
VK3HV	George Francis	QF31	-	108	125	168	-	-	-	-	-	401
VK5FAAF	Robert Allen	PF96	-	248	124	-	-	-	-	-	-	372
VK2ZSZ	Steve Zoneff	QF44	21	162	-	-	-	-	-	-	-	183
Section B: Single Operator, 8 Hours												
VK3HY	Gavin Brain	QF32	124	471	725	800	-	-	-	-	-	2120
VK3BG	Ed Roache	QF24	70	372	515	712	-	-	-	-	-	1669
VK5AKH	Andrew Hall	PF94, PF95, PF96	74	276	465	280	-	-	-	340	-	1435
VK5DK	Colin Hutchesson	QF02	-	267	-	-	320	320	210	210	-	1327
VK3OE	Andrew Martin	QF21,QF22, QF31	96	387	550	256	-	-	-	-	-	1289
VK4UAT	Allan Turner	QG61, QG62	-	63	165	264	330	-	-	330	-	1152
VK3EK	Rob Ashlin	QF42	-	255	400	264	-	-	-	-	-	919
VK5ADE	Stuart Cameron	PF85, 86, 95, 96	98	327	495	776	-	-	-	-	-	890
VK4ALH	Leicester Hibbert	QG63	49	234	315	-	-	-	-	210	-	808
VK3YFL	Bryon Dunkley-Smith	QF22, QF23	70	318	365	-	-	-	-	-	-	753
VK5LA	Andrew Williss	PF84, PF85	43	300	365	-	-	-	-	-	-	708
VK3LOL	Robert Nicoll	QF21	-	165	320	-	-	-	-	-	-	485
VK4EV	Ron Everingham	QG62	36	111	175	-	-	-	-	-	-	322
VK3PRA	Ruben Acevedo	QF21	-	150	-	-	-	-	-	-	-	150

Section C: Multi Operator, 24 Hours

VK3UHF	LUMEG (1)	QF21	121	849	1130	1152	1060	440	560	700		6012
VK3ER	EMDRC (2)	QF22	243	987	1340	1360	-	-	-	-	-	3930
VK5LZ	Elizabeth ARC (3)	PF85, 86, 95, 96	115	489	785	1016	-	-	-	1000	-	3405
VK5OM	(4)	QF03	131	696	800	1200	210	-	-	-	-	3037
VK1BL	(5)	QF44	40	768	605	536	410	-	-	350	-	2709
VK4WAT	Tableland REC (6)	QH22	220	432	510	496	-	-	-	260	-	1918
VK3JTM	(7)	QF12	-	432	635	808	-	-	-	-	-	1875
VK2BTW	Tamworth RC (8)	QF58	58	471	430	224	-	-	-	-	-	1163
VK2AWX	Hunter RG (9)	QF56	165	588	400	-	-	-	-	-	-	1153
VK3III	Wimmera ARG (10)	QF13	48	297	435	296	-	-	-	-	-	1076
VK3LCD	(11)	QF01	-	372	415	-	-	-	-	-	-	787
VK4WIE	CBRS (12)	QG62	-	417	320	-	-	-	-	-	-	737

Section D: Multi Operator, 8 Hours

VK3XPD	(13)	QF21, QF22	82	363	410	624	450	440	450	450	-	3269
VK5LZ	Elizabeth ARC (3)	PF85, 86, 95, 96	104	387	635	912	-	-	-	960	-	2998
VK3AIG	(14)	QF12	104	348	520	432	370	-	-	-	-	1774
VK3FRC	FAMPARC (15)	QF21	104	453	365	400	-	-	-	-	-	1322
VK3APC	MDRC (16)	QF21	79	135	255	304	-	-	-	-	-	773
VK2MA	HADARC (17)	QF46	38	216	190	256	-	-	-	-	-	700
VK2EH	CCARC (18)	QF56	-	234	305	-	-	-	-	-	-	539

Section E: Home Station, 24 Hours

VK2DAG	Matt Hetherington	QF56	86	666	640	688	-	-	-	-	-	2080
VK4ZDP	David Purkis	QH32	71	294	360	264	-	-	-	-	-	989
VK3KIS	Andrew Kayton	QF22	48	192	355	320	-	-	-	-	-	915
VK5LSB	Simon Brandenburg	PF94	72	348	470	-	-	-	-	-	-	890
VK2EI	Neil Sandford	QF68	37	516	315	-	-	-	-	-	-	868
VK5FUNE	Darryl Ross	PF95	-	300	425	-	-	-	-	-	-	725
VK3CT	Damien Wright	QF31	-	372	340	-	-	-	-	-	-	712
VK3TPR	Peter Roberts	QF22	51	249	350	-	-	-	-	-	-	650
VK4TJ	John Kirk	QG52	22	186	245	168	-	-	-	-	-	621
VK1PAR	Alistair Long	QF44	52	312	255	-	-	-	-	-	-	619
VK3DMW	Ken Brown	QF31	-	246	105	264	-	-	-	-	-	615
VK2EAH	Andy Hood	QF56	-	360	250	-	-	-	-	-	-	610
VK4FJON	John Cockinos	QG62	-	261	210	-	-	-	-	-	-	471
VK3FMCQ	Nick Kraehe	QF31	-	261	165	-	-	-	-	-	-	426
VK3BLE	Colin Pomroy	QF31	-	174	220	-	-	-	-	-	-	394
VK3XOR	Craig White	QF22	40	123	205	-	-	-	-	-	-	368
VK1WJ	Waldis Jirgens	QF44	26	114	140	-	-	-	-	-	-	280
VK2KTC	Tom Clifford	QF56	38	81	125	-	-	-	-	-	-	244
VK3DAG	Steven Hamer	QF23	45	69	115	-	-	-	-	-	-	229
VK4JAZ	Grant McDuling	QG62	35	-	105	-	-	-	-	-	-	140
VK2ZQX	John Watson	QF58	21	104	-	-	-	-	-	-	-	125
VK3KST	Tom Steadman	QF31	-	120	-	-	-	-	-	-	-	120

(1) Lara UHF-Microwave Experimenters Group: Chas Gnaccarini VK3PY, David Learmonth VK3QM

(2) Eastern and Mountain District Radio Club: Mike VK3AVV, Doug VK3FSNO, John VK3PZ, ,Jonas VK3VF, Hannah VK3GNU, Ivy VK3LNX, Peter VK3QI, Max VK3WT, Jack VK3WWW

(3) Elizabeth Amateur Radio Club: Iain Crawford VK5ZDB, John Ross VK5NI, Steve Mahony VK5AIM

(4) Jim Bywaters VK5OM, Bill Day VK3LY, Brian Farmers VK3AQX

(5) Ted Garnett VK1BL, Greg Parkhurst VK1AI, Andy Sayers VK2AES

(6) Tableland Radio & Electronics Club: John Roberts VK4TL, Dale McCarthy VK4DMC, Stuart Dunk VK4SDD, Jeff Cochrane VK4BOF

(7) Tim Morgan VK3JTM, Dylan Cator VK3JWC

(8) Tamworth Radio Club: ,John Hams VK2JH, Cris Perrett VK2FBOZ, ,Robert Duck VK2VRD, ,Alan Alderson VK2HQD, Brenda Taylor

(9) Hunter Radio Group: T. Easlea VK2COE, G. Wrightson VK2SH, G. O'Brien VK2FA, M. Clarke VK2MJC, W. Lawrence VK2FWJL, P. White VK2YPW

(10) Wimmera Amateur Radio Group: David Timms, VK3YLV, Andy Squires VK3AS, Doug Kay VK3KAY, ,Neil O'Shannassy VK3UCO

(11) Gary Smith VK3LCD, Paul Brown VK3HJV

(12) City of Brisbane Radio Society: Miles Colledge VK4FUST, Ross Colledge VK4WRC, John Morris VK4MJF

(13) Alan Devlin VK3XPD, Michael Coleman VK3KH

(14)John Kennedy VK3AIG, Ian Lloyd VK3IDL, Ian McDonald VK3AXH

(15) Frankston and Mornington Peninsula ARC: Ed VK3GD, David VK3EW, Roy VK3GB, Stjepan VK3WF, David VK3LDR

(16) Moorabbin & District Radio Club: Ian Morris VK3IFM, Lee Moyle VK3GK, Gerard Werner VK3GER

(17) Hornsby & Districts Amateur Radio Club: Steve VK2BCD, Rosa VK2ANG, Rod VK2DAY, Dave VK2HSS, Tomas VK2CCC, Mark VK2BMW, Mike VK2FNBA, Peter VK2TTP

(18) Central Coast ARC: Dave Hardy VK2JDH, Col Matten VK2KCM

ar

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Welcome back from the season's festivities. I trust that the New Year's resolutions include improvements to the station, and more time on air to work the DX.

Of course, AR magazine also has a break over Christmas, so this report covers the period from early November to early January – double the normal period over what is often one of the busiest periods of the year. So, forgive me if I have missed some significant contacts.

What a season it has been so far. November was relatively quiet. December started with a burst of Es propagation, and then went quiet before finally delivering a bumper few days of Es for Christmas and the New Year. But, I am getting ahead of myself.

The morning of December 4th saw the first of the 2 m Es contacts. In a short and patchy opening, starting at 2348 Z, Ron VK4DD worked Kevin VK3WN, Geoff VK3CNX, Alan VK3XPD and Andrew VK3OE. Other contacts included VK4KK to VK3OE and VK3WN, and VK4JMC to VK3WN.

On December 6th, several Brisbane stations were working up the coast nearly to Townsville (VK4FNQ) when Trevor VK3VG in central Victoria broke in. Trevor had been working on the computer in the shack and heard VK4BG and VK4DD chatting. The opening was only brief and he only managed to work Ron VK4DD.

December 7th saw two huge Es openings. The first, commencing at about 2230 Z and lasting for 2.5 hours, was from northern VK4 to VK5. Stations involved included VK4FNQ, VK4BKP, VK4BEG, VK4FP, VK5BC/MM, VK5PJ, VK5NY, VK5ACY and VK5ZK. Brian VK5BC was maritime mobile on a houseboat on the Murray north of Murray Bridge and worked John VK4FNQ using a 5/8 whip.

The other opening on December 7th was from VK2 and VK3 to southern ZL. At 0013 Z, Steve VK2ZT worked ZL3OZ. Bob ZL3TY then got into the action. Over the next 2 hours, Bob worked 29 VK stations with the opening working its way south and then west along the coast of Australia. Bob reports that it is the best Es opening he has ever experienced. Stations worked include VK2BHO, VK2BZE, VK2ARA, VK2HN, VK3ZYC, VK3OE, VK3XPD, VK3MIR, VK3ESE, VK3DUT, VK3NX, VK3PY, VK3KAI, VK3WRE, VK3AKK, VK3RU, VK3QM, VK3TPR, VK3AMK, VK3HZ, VK3ZYS, VK3ALZ, VK3AFW, VK3SO, VK3AMZ, VK3BQJ, VK3CAT, VK3CMC and VK3WN. Also in the fray were ZL3JT and ZL3NW on the NZ team, and VK2BHO, VK2AH, VK2BXT, VK2BZE, VK2ZEJ, VK2HN, VK2GKA and VK2APG.

The following day (December 8th) was a lot quieter. At around 0400 Z, Bob ZL3TY reported working VK2GKA and VK2ZT.

Things then quietened down considerably, with not a great deal to report until Christmas Eve. On December 24th, Bob ZL3TY reported working VK2FZ and VK2XTT. He also heard the Cooma beacon on 144.5875 and Ch5A Newcastle. Ron VK4DD reported hearing Joe VK7JG, and working VK3WN and VK5DK.

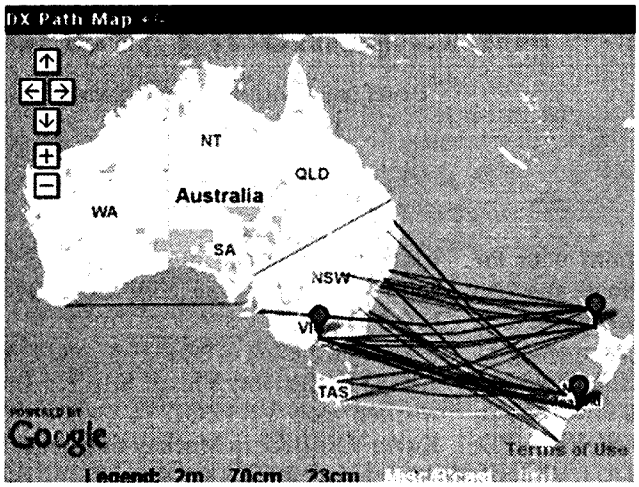
On Boxing Day, a high-pressure cell over Bass Strait produced some good tropo conditions between VK3 and VK7 with Joe VK7JG and Norm VK7AC working many VK3 stations.

On the evening of December 29th, another tropo opening produced some good signals from Adelaide into VK6. At about 0900 Z, Rob VK6JRC worked Phil VK5AKK and Brian VK5BC/P on 2 m. Bill VK5ACY worked Wally VK6WG on 2 m (5x5) and several times on 70 cm peaking to S9. Also working Wally on 70 cm were VK5AKK, VK5ZK and VK5BC/P.

Then on December 30th, the heavens seemed to open – well, almost. A huge Es cloud descended upon east central Australia causing an extended opening lasting 5.5 hours during which several VK records were broken. There was so much activity and so many stations involved that I could not hope to describe it all. Some of the notable contacts, showing the shifting conditions, are listed below.

The first inkling of the big opening was at 2153 Z when Ray VK4BLK in Yepoon worked Rob VK1ZQR in Canberra. Kevin VK4BKP in Mackay then joined in working into VK2 and then VK3. Then Brisbane stations were working into Melbourne. At 2330 Z, Matt VK2DAG worked across to Peter VK5ZPG. Then at 0000 Z, Adam VK4CP worked Jeff VK5GF in Adelaide. At 0030 Z, Norm VK7AC worked Andru VK4KAY in Mackay over a distance of 2254 km. At 0130 Z, Wally VK6WG joined the fun and worked Bill VK5ACY via Es. At 0144 Z, Wally worked Matt VK2DAG for a distance of 3080 km. Three minutes later, he worked Steve VK2ZT to set a new VK2 and VK6 2 m record of 3140 km. At 0154 Z, Bill VK6BE, three km closer than Wally, also worked both Matt and Steve. Bill also worked Col VK2KOL and Karl VK2GKA. After a short lull, at 0230 Z Ian VK1BG worked VK6WG for a new VK1 2 m distance record of 2819 km. At 0245 Z, a short CQ from Brad VK2GWB was answered by Wally VK6WG. Then, nearly an hour later at 0320 Z, Rob VK1ZQR worked VK6YAU (Wally's son running from Wally's QTH) to reset the VK1 record to 2830 km. Finally, at 0330 Z, to round out an incredible day, Andrew VK3OE worked Bill VK6AS in Esperance. Bob VK6BE reported that it was one of the best days he has ever encountered. In the space of one hour, he worked VK2KOL, VK5THA, VK2BXT, VK2BCC, VK2ZT, VK5DJ, VK5BC, VK5KCX, VK5KC, VK2DAG, VK5AIM, VK5GF, VK5NZ, VK5OZ, VK2FZ, VK5ZBK, VK5ACY, VK1ZQR and VK2TP.

The following day – December 31st – saw more Es openings from VK2/4 to northern ZL and across eastern Australia. Again, there were many contacts, so I will only mention a few. At 2300 Z, Ross VK2DVZ worked ZL1SWW followed closely by ZL2TAL and ZL1IU. By 0130 Z, the cloud had moved north, with Adam VK4CP working ZL1TPH. From



The map from the VK Logger showing the Spots gives some idea of what was happening – lines going every which way across the Tasman.

about 0430 Z, northern VK4 stations were working into VK3 and VK5. By about 0600 Z, propagation had gone.

New Years Day brought another incredible Es opening from the east coast across to ZL. Things started at 2345 Z with Ross VK2DVZ working ZL3OZ. Once again, there were too many contacts to mention. Contacts were flying between ZL1, 2, 3 and 4 to VK1, 2, 3, 4, 5 and 7. At 0100 Z, Nick ZL1IU worked across to Jeff VK5GF (3179 km) and Garry VK5ZK, slightly closer. ZL1, 3 and 4 were worked by many stations in Melbourne – for many of the VK3s, this was their first ever ZL on 2 m. To add to the mix, at 0115 Z, Brian VK5BC/P worked Wally VK6WG – possibly via Tropo. At 0146 Z, Peter VK5ZPG worked Glenn VK4BG. Chris VK1DO/P was in the thick of things at his beach house on the southern NSW coast. He worked 15 ZLs easily, and then just for fun, he went mobile down to the shops. On the way, at 0215 Z, he worked Nick ZL1IU setting a new VK 2 m mobile record of 2320 km.

The opening continued for over 4 hours until 0400 Z. The map from the VK Logger showing the Spots gives some idea of what was happening – lines going every which way across the Tasman.

As an aside, Ron VK3AFW, one of the gentlemen of the air and technical boffin combined, was quite chuffed to have finally worked a ZL on 2 m. He writes:

On the 10th of January I will have been licensed for 48 years. I worked my first ZL on 2 m early in December 2008 just gone. There have been four or five openings since 1990 in which I have heard a ZL and listened while others worked him but I could not make the grade until a couple of weeks ago. I was out or not operational on 2 m for all other openings over the last 48 years.

Yesterday I worked 7 ZLs from the middle of the top part of the North Island to the bottom east coast.

Around the early to mid 1970s, I was engaged in a VK-ZL propagation experiment. Although we had official permission for an elaborate beacon detection and alarm system, we never got the receiver working let alone the rest of the system. Not enough willing workers. As convenor, I have to take the blame for not getting it completed by bullying more people and or doing more myself. A ZL in Christchurch was our contact (Terry Carroll I think) and their beacon was to be monitored. Ken McCracken took over the project but changed it to 6 m.

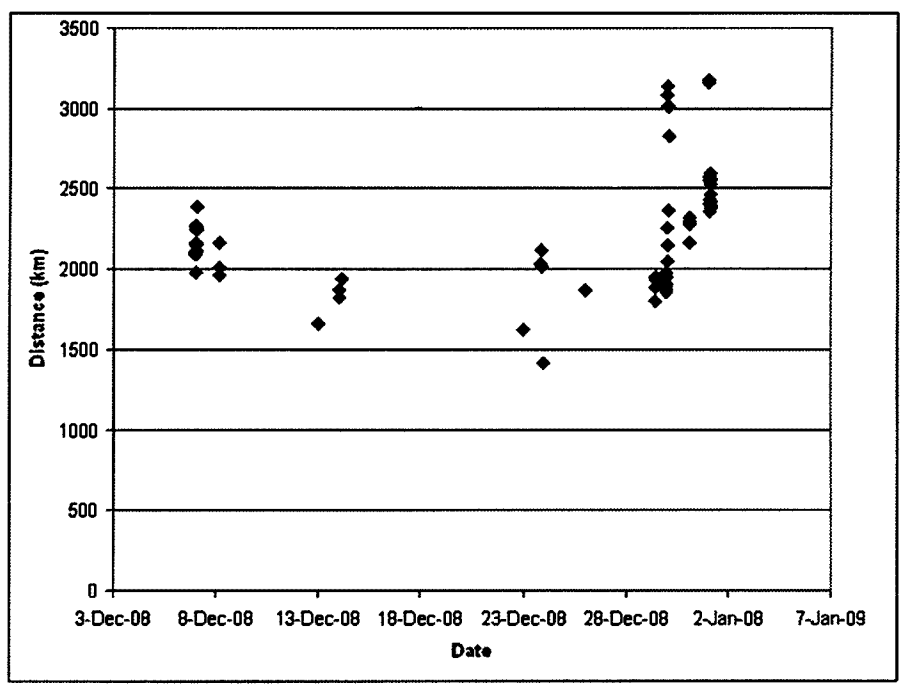
So to work a couple of stations around Christchurch was a bit like closure for me. And to work ZL1, 3 and 4 was worth the wait. This season has produced the best couple of Es openings on 2 m to ZL in 50 years. If the band does not open again until next season, it won't matter for me now.

There was one opening in the 1950s when a ZL was copied in Melbourne, including 5x9 by a mobile. As this was unheard of (all AM then) the group labelled the station a pirate and refused to work him. Of course the truth came out days later. I can only imagine the gnashing of teeth, ripping out of hair, banging of foreheads and general cussing that went on.

Anyway, I digress. On with the propagation reports.

January 3rd and 4th saw some good Tropo conditions across Bass Strait from VK7 to VK3. Norm VK7AC was putting a particularly strong signal across the water. On the 4th, there was an Es opening from VK2 to ZL1. At around 0030 Z, the VK8RAS 2 m beacon was heard by both Peter VK6KXW near Perth, Steve VK2ZT and Col VK2KOL.

On January 6th, some good Tropo conditions occurred from VK2 to ZL. From a portable location at the very northern tip of ZL, Steve ZL1TPH reports working VK2ZT, VK2AMS, VK2KOL, VK2EI, VK2TG, VK2IDM and VK2EY on 2 m and VK2AMS, VK2ZT and VK2DVZ on 23 cm.



Rex VK7MO created this chart from the VK Logger History page. It shows the 20 longest distance QSOs for each day from early December:

Then on the 7th, Steve had moved down the west coast of the North Island and reports working VK2DVZ, VK2AMS, VK2EI, VK2XW, VK2MAX, VK2TG and VK2BHO on 2 m and VK2ZT, VK2AMS and VK2DVZ on 23 cm.

So, all in all, a bumper Es season so far, but the Tropo has not been outstanding. Let's see what the next few months bring.

All not plain sailing

A few stories came out of the happenings over the last two months.

Although the Es seemed to be raining down upon us in Melbourne on New Year's Day, with lots of activity from ZL, not all of the stations in the area were having success. Both Bryon VK3YFL and Doug VK3UM reported spending a fruitless day looking for any ZL contacts, with only a brief burst or two heard. After much checking of station performance, the conclusion that both of them came to was that their takeoff angle in the ZL direction (3 degrees for each) was just too much for them to work into the Es cloud. Perhaps portable/mobile operation is the answer next time.

Bob VK6BE was in the thick of things during the VK2-VK6 opening. While he worked many stations, he was not impressed with the operating technique of one VK2. It seems that the VK2 was frequently calling on 144.1 and announcing he was listening on another frequency. However, he did not appear to be monitoring 144.1 and was calling over the top of whoever was on the frequency at the time. While stations are encouraged to QSY away from 144.1 (witness the dog pile on that frequency in Melbourne when the ZLs were thundering in), the regulations state that you must check that a frequency is clear before calling. A simple "is this frequency in use?" is all that is required.

Ross VK2DVZ almost succeeded in working Bob VK6BE. However, unfortunately the QSO was invalidated by some over-eager assistance from another station. Ross writes:

I missed out on completing a contact with Bob VK6BE during the Es opening that occurred on 30-12-2008 - a contact of about 3221 km that would have been rewarding, could it have been achieved. The potential to set a new VK2/VK6 distance record still goes begging as a result of an unknown well-meaning amateur located in VK5, insisting on relaying the signal report that Bob had given me, which I was unable to copy due to the initial QSB. Each time I asked for a repeat of my report from Bob, the unknown operator who had a stronger signal than Bob's insisted on stating '57', making it virtually impossible for me to read Bob's reply. Several times this happened during the brief window of opportunity, but as a result of the 'interference' the contact was unable to be completed as the QSB finally took out Bob's signal completely.

It is worth repeating that, for a valid QSO, the two stations must exchange callsigns and another piece of unknown information (usually a signal report). This must be done directly on air, without assistance from other operators, loggers, email, telephone etc.

Several operating practices that I observed caused some difficulties for others. Firstly, some operators insist on using non-standard phonetics for their callsign – America instead of Alpha, for example. Unfortunately, when a signal is being chopped up by Sporadic E, it becomes difficult to identify the parts of the phonetics that get through – instead of 26 options that the brain can choose from by filling in the gaps, the problem becomes much larger. I waited for over a minute in a queue to work one ZL while a local repeated his non-standard phonetics over and over without success. When he finally switched to standard phonetics, the callsign went through first time. The other thing worth mentioning is that Sporadic E openings often only last for a very short time. Unfortunately, some operators insist on having long-winded overs giving their life story, weather, etc, while others wait impatiently in the queue. All that is necessary for a contact is to exchange callsigns and signal reports - name and QTH if you must. However, please be brief and allow others to have a go.

Aircraft Enhancement

After many months (years) of trying, Barry VK3BJM in Kyneton has finally managed to work Peter VK5ZPG in Quorn. Barry writes:

Monday morning and I was still in the shack at 2235 Z on 28/12/08. Tropo out to the west was unspectacular I noticed a QANTAS flight QF575, travelling from Sydney to Perth, at an altitude of 40,000'. It was still in NSW, SW of West Wyalong, and had started tracking toward Berri, SA. Berri is in the mid-way region between Peter VK5ZPG and myself. I posted a note on the Logger at 2241 Z, then gave Peter a call on the phone to make sure he would be listening. At 2248, and with the aircraft still about 6 degrees north of the beam heading (i.e. at 316 degrees True; Peter is at 311 degrees True), I started calling. Just before 2250 Z, Peter appeared, and we exchanged reports; I gave him 41, and he gave me a 42. The opening lasted about a minute in total. The aircraft was just south of Berri at the time. The Logger calculated the distance at 795.5 km.

Interestingly, Michael VK3KH noted having heard quite a bit of Peter's side of the contact, too, which is a good effort. This bodes well for those in Melbourne with lower noise floors.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Many good openings in VK occurred during November particularly down the eastern seaboard and VK5. Conditions further improved during December with the first good openings to VK6 from VK5 occurring on the 9th and 10th of Dec. On the 9th, the band was open for most of the morning with many VK6 stations active and both the Perth VK6RPH and Bunbury VK6RBU beacons good strength into VK5. The same again on the 10th, but this time the band also opened to Albany, with Bob VK6BE and Wally VK6WG both working VK5's. It is great to hear these old timers both active and as keen as ever.

At around 0500 UTC on the 14th December after a good day when the band had been open to most areas of VK including VK8 (Alice Springs and Darwin) as well as to Norm P29NB,

Willem DU7/PA0HIP in Lapu-Lapu City, Philippines, was heard calling CQ on CW by Paul VK4MA in Hervey Bay who completed a contact with Willem. CW contacts with Willem were then completed by Russel VK4BEG, Garry VK5ZK, Peter VK5PJ, Steve, VK3OT and Mark VK8MS. Willem was running 100 W from an IC-746 into 2 x 5-el Yagis.

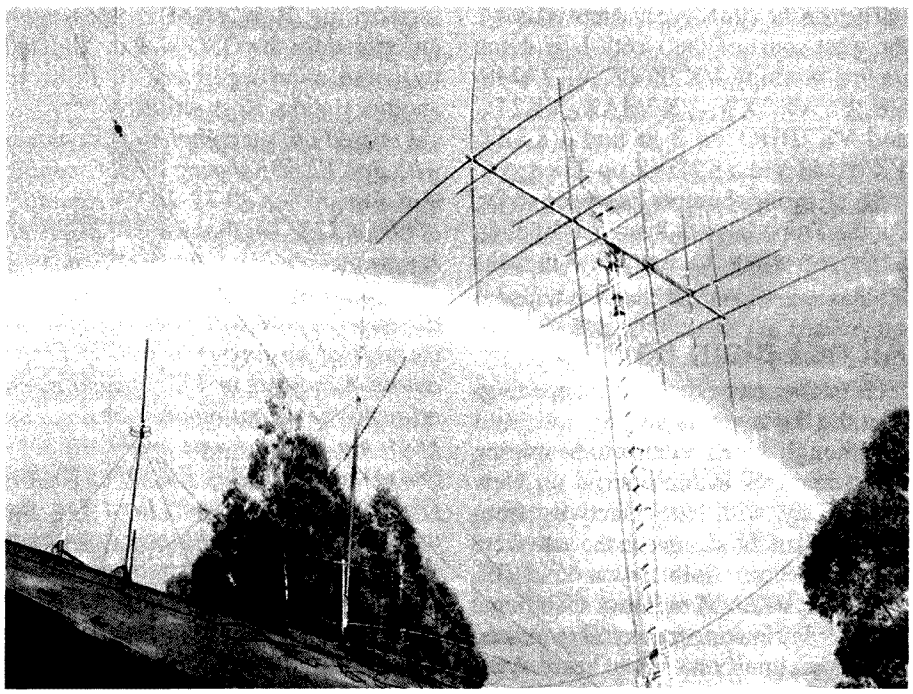
Paul A35RK returned to Tonga mid December and immediately made an impact with contacts into VK and ZL on most days. This season openings to Paul seemed to be longer in length with signals generally stronger in strength than last season with many good openings occurring to the southern states, VK3, 5 and 7. Paul completed 145 contacts into VK/ZL on the 30/31 December which included 8 CW and 8 SSB contacts into VK6 on the 31st December. Most of the VK6 contacts were over 7000 km with reports of 5/3 - a remarkable feat.

Another station to add interest to this summer's E season has been Norm P29NB. Norm is located at Ukarumpa, in the Eastern Highland Province of Papua New Guinea, Lat.: S 06° 20.295' (20' 17.8"); Long.: E 145° 52.835' (50' 50.3"); Grid Locator QI23wp and at an altitude of 1550 metres/5100' ASL, where Norm says the weather is beautiful most of the time.

Norm's station setup is as follows:

Radio: Current HF/6 Transceiver is an Icom IC-756ProII, usually running 100 Watts.

Antenna: The 6 metre antenna is a 6-element Quagi, interlaced on the boom with an HF Quad antenna. The REF, DE and DIR1 are quad-type loops, and DIR2, DIR3 and DIR4 are all Yagi type elements, mounted on a 33 foot boom at 55 feet above the ground on a crank up tower. The HF Quad has 5 elements on 10 and 12 metres, and 4 elements on 15, 17 and 20 metres.



Norm's antennas

Computer: Older Dell laptop that runs DX4WIN logging software, DigiPan v.2.0, CT for contesting, PROBE v7.0 for controlling a Radio Shack Pro-2042 scanner, and misc. other radio related programs.

Norm first worked into northern VK4 on the 8th November working 6 x VK4s. Further openings occurred on:

23rd November where Norm worked Dave VK1DJA,

6th December 10 xVK2s, VK3s OT, LY and MTV and VK4s BKP, BEG and SIX,

14th December, VK2s BHO and ZQ, 14 x VK3s, 11 xVK4s, 9 x VK5s and VK8s MS and RR.

Good work Norm.

On 19th December, Gary VK4ABW in Townsville heard 9V1UV calling CQ and completed a contact with Selva in Singapore at 57. Mark VK8MS in Darwin then worked Selva at 51.

Conditions in November/December have been very good from all areas of VK and ZL with many stations being active and it was possible to work all states of VK on many days. It is hoped the good conditions carry on into January.

Please send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

ar

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Hamads

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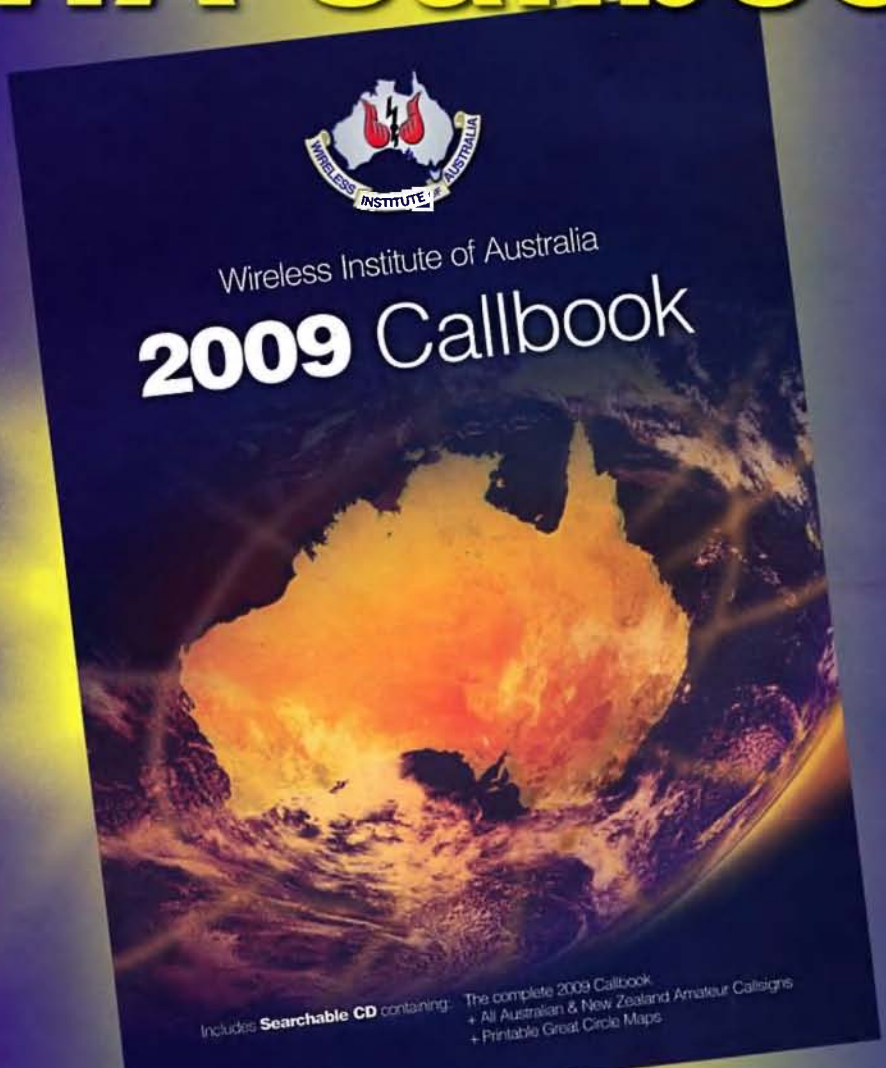
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Amateur Radio

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Our Cover this month

WIA reviews the ICOM IC-92AD

Waterproof, 2 m & 70 cm, D-STAR, in a dual band 5 W handheld transceiver – what more do you need? GPS? World Wide Coverage? Done! The cover picture shows the IC-92AD and optional HM-175GPS, with the display in "dual watch" mode. Photo by Peter Freeman VK3KAI

See the full story on page 27

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3KAI

Our country

As I write this Editorial, I note that the news media for the past week or two has been full of stories about a couple of the natural features of our climate – floods and fires.

In the tropical regions to the north, we see that "The Wet" has well and truly arrived. Ingham and surrounding regions are experiencing floods, with the likelihood of further rains to come.

In the south, Victoria has had scorching temperatures and raging bushfires.

Whilst I personally have not been directly impacted, the local area has suffered from two major fires.

The Gippsland fires – some comments from early on

Much of the following account is based on some comments that I posted to the vk-vhf email reflector on Monday 9 February. I sent the account as I had received some telephone calls and emails enquiring if all was OK. Why were the questions being asked of me? An arsonist started a fire on the south-eastern edge of my home town of Churchill at around midday on the Saturday. At the time, the temperatures were in the mid 40s and there was a strong gusty wind from the north-east. The local ABC radio station had been giving updates of the spread of the "Bunyip Ridge" fire complex well to my west – that fire had started a day or two earlier and was now spreading fast.

My questions were answered during the News coverage on Monday night – they were on camera at the Traralgon Evacuation Centre. The people were safe, but the house is gone!

I decided to send this response to a message from one of my regular 2 m contacts from Canberra to the reflector, to give others an update on the local situation in Churchill.

All is OK here - the fire started near the SE corner of the town of Churchill, but out of town. The strong NW winds drove it rapidly to the south and SE. It certainly looked spectacular from in town. The fire rapidly spread to the SE, spreading through the native forests and heading toward Balook. The situation was made worse by the smoke plume blowing in from the fires around Bunyip Ridge, which was rapidly spreading towards Drouin and Warragul. By about 1700, lights were needed inside the house, because of the smoke plume from the NW.

The intensity was high, driven by high winds. The fire spotted to the south of the Stzrelecki range, and started fires in the region near Yarram - particularly at Devon North.

Around 1700 the wind changed direction - around to from W & SW. That drove the fire to the east, into Jeeralang North, Jeeralang, Jumbuk, Koornalla, Le Roy, Callignee and places beyond - close to Gormandale.

From what I have heard to date, most amateurs in the region are OK. There are some that we do not hear from often - I guess that time will tell.

Ralph VK3WRE and others who work locally for BAE Systems have been very busy all weekend - tending to RF systems, installing extra repeaters for the emergency services and such like. Yesterday Ralph was taken to Mt Tassie by helicopter to check on things. He checked all that he could and then had time to repair the 146.800 Mt Tassie repeater. Ralph's comment last night was that the ground was burnt to within 1 m of the cabinet housing the repeater. The local "Channel 10" TV station was also restored. All the transmitters on the Broadcast Australia (BA) site at the summit compound are all off air - no mains power and the backup generator was significantly damaged by the fires. (The BA site is the major regional transmitter site, with

continued on page 5

Michael Owen VK3KI

The WIA and callsigns

Before May 2004 the WIA had been advised formally by the Australian Communications Authority, the ACA, later to become one of the agencies to form the Australian Communications and Media Authority, ACMA, that it was intended that the provision of amateur examinations would be subject to open tender.

For us it started in May of 2004.

It was only a couple of weeks after the WIA had adopted a new Constitution that created an entirely different organisation from the federal body, composed of state and territory organisations, that the ACA published its Outcomes of the Review of Amateur Service Regulation, the Outcomes.

The Outcomes referred to a proposal published in its original Discussion Paper as follows:

The discussion paper offered the possibility for an amateur registration body (ARB) to manage amateur examinations, certificates and callsigns (and, if class licensing were to proceed, station location information).

Comment was made on the submissions received on this topic as follows:

The majority of submissions that commented on the possible outsourcing of administrative matters were in favour of the suggestion and considered that any outsourced functions should be handled by a non-profit organisation.

The conclusion of the Outcomes was:

The ACA has decided to proceed with the outsourcing of amateur certificates and callsign management. Outsourcing the issue of certificates is consistent with the recommendation made in the Productivity Commission's Radiocommunications Inquiry Report that the ACA delegate the conferring of certificates of proficiency for amateurs.

From then, the management of examinations and the issue of certificates of proficiency, very logically linked together, were also linked to what was vaguely called callsign management.

What was the WIA's position? Let me quote from the formal statutory report of the Directors for the year ending 31 December 2006, sent to all members in March 2007.

The retention of the right to manage amateur examinations is of critical importance to the Institute. If it loses that right, a substantial resource, including the resource of so many people who have been qualified as WIA Assessors will be lost, and a significant cash flow will disappear, and the ability of the Institute to employ adequate staff will be seriously diminished.

Our focus was the examinations. It was also said in that Report:

The Institute has been told that it is intended to proceed with the proposal that a single body would be sought to manage amateur examinations, certificates and callsigns. The Institute has made extensive representations that its role of examination management should be made secure, given the investment of so many in the new system.

On 15 October 2007 ACMA published its Request for Expressions of Interest in providing certain functions for the amateur service, including the management of amateur examinations, the issue of certificates of proficiency and certain administrative functions in relation to call signs. It was not structured to provide an opportunity to seek to provide only part of the three services; it required the management of examinations, certificates of proficiency and callsigns. It required all Expressions of Interest to be lodged by 8 November 2007. The Institute lodged its Expression of Interest by 8 November 2007. On 7 February 2008 the Institute was advised that it had been selected by ACMA to manage amateur examinations and to provide certain Amateur licensing functions and services to the Amateur community on ACMA's behalf.

In short, the WIA's position has always been that it was better for an amateur organisation to continue to manage the examination system, and this was particularly so since 2005 when it adopted a completely new system with the help of a dedicated amateur who also conducted a Registered Training Organisation and the many who qualified as Assessors and later as Learning Facilitators, to meet the requirements of the new licence and practical examination requirements introduced in October 2005.

And if callsigns had to be part of what the WIA did, well, so be it.

We now know what is meant by "callsign management".

In another part of this issue of AR, the new system for the administration of amateur callsigns, which comes into effect from 2 March 2009, is described.

In short, ACMA will not issue an amateur callsign, or change a callsign unless a Callsign Recommendation from the WIA is produced.

It does not matter if you are happy to have the next available callsign, or want to choose a callsign, (what the Americans call a "Vanity Call") or even want a two letter callsign in Victoria, New South Wales or Queensland, you will have to have a WIA Callsign Recommendation.

We know that many people do want a "Vanity Call" and we have tried very hard to set a system that better meets the needs of those people.

We will have a place on the WIA website where everyone can see what callsigns are available at any given time. Yes, you can look at the ACMA website and the Register of Radiocommunications Licences and see if a callsign is allocated. But that does not tell you if it is available. It may have been held by a deceased amateur and is still embargoed in the two years after it expired, or that the ACMA has placed an administrative bar for a particular call sign.

I hope that you will see that we have tried to make the system as fair and open as possible, even establishing a short period in which errors can be detected and rectified.

We have set up a special system that we hope will be fair to all to deal with two letter callsigns from the states where

continued next page

WIA News

WIA announces 2009 AGM and weekend of activities

The Wireless Institute of Australia is pleased to announce the 2009 Annual General Meeting and "GippsTech – Special Edition" the WIA AGM weekend of activities for 2009.

The annual GippsTech conference, held each year in July, has earned a well deserved reputation as the premier technical conference bringing together hundreds of VHF, UHF and SHF enthusiasts from right around Australia.

The 2009 WIA AGM weekend of activities is called "GippsTech – Special Edition" and will bring together some of the very best speakers from GippsTech conferences to this special event. Participants who register for the weekend activities will be able to attend a range of fascinating and highly informative radio related technical presentations by some of Australia's leading technical presenters, on a range of topics extending beyond the traditional GippsTech focus. The weekend of activities kicks off on Friday evening the 1st May 2009 at the Gippsland Campus of Monash University.

The formal WIA AGM will commence at 2 pm Saturday afternoon 2nd May 2009 at the University and will be followed by the Open Forum, where members will be able to hear reports on a range of WIA activities and provide feedback. The formal Notice of Meeting and Annual Reports are with this issue of Amateur Radio.

The WIA annual dinner will follow the Open Forum. The dinner is to be held in the ballroom of the Century Inn on the Princes Highway at Traralgon. As usual, the evening will include a mystery guest speaker!

The weekend will also offer a range of relaxing social activities, local tours and sightseeing for partners who would prefer an alternative to attending the technical conference.

WIA Comment

continued from previous page

likely demand exceeds supply. As time goes on, two letter callsigns in the more populous states will only become available through an existing licensee not renewing a licence or it being cancelled.

I have no doubt there will be glitches, and things we will have to improve.

I know that some people will be unhappy that this task is not left with ACMA but is being undertaken by the WIA. But please consider this: if ACMA was determined that callsign management was to be outsourced (and it was) and that a single body to manage exams, issue certificates and manage callsigns would be given those functions, is it better that it be done by the amateur body or by a commercial organisation?

ar

ACMA/WIA Sign Contract for WIA Management of Certain Amateur Licensing Functions

On 28 January 2009, Australian Communications and Media Authority (ACMA) Chairman Chris Chapman signed a Deed between ACMA and the Wireless Institute of Australia (WIA). The Deed sets out the conditions under which the WIA will manage amateur examinations, the issue of certificates of proficiency and callsign recommendations for the next five or (at the WIA's option) 10 years.

From Monday 2 February 2009, the WIA will issue amateur certificates of proficiency, in addition to conducting amateur examinations (including special examinations).

WIA issues new Assessment Instructions

On 29 January the WIA announced that the Deed between it and ACMA had been signed, and so since 2 February only the WIA will issue certificates of proficiency for qualifications achieved on and after that date.

This has made necessary a very complete revision of the Assessment Instructions, the basic document of the WIA Exam Service, which sets out the methods that must be followed in all WIA amateur assessments.

A particular focus has been to minimise the number of times the same information has to be written of different forms by candidates and Assessors. A number of ambiguities have been removed and the obligations of all involved to observe the privacy legislation have been made clear.

A hard copy of the revised Assessment instructions has been posted to every WIA Assessor and Learning Facilitator, and the new forms will be included in every Exam Pack prepared.

A copy of the Assessment Instructions can be found on the WIA website, and the new forms can also be downloaded from the site.

"I would like to thank the many people who contributed to this review of the Assessment Instructions, particularly Fred Swainston, Peter Young, Robert Broomhead and Ron Bertrand. I do hope that everyone using it will find that this revision is easy to understand and that the process for recording essential information is easier to manage" said WIA President, Michael Owen VK3KI.

WICEN assists in Victorian fires

On 9 February 2009 WICEN Victoria Secretary Mark Dods VK3XMU reported that WICEN had been activated to assist in the tragic bushfires that have caused so much devastation and loss of life in Victoria.

WICEN appealed for additional operators for the bushfires, and received an unprecedented response. Very quickly they had sufficient operators available to staff the likely tasks ahead.

Mark Dods said on 11 February that it appeared that WICEN's role in this emergency was going to be a long, hard marathon over an extended period."

As this edition of AR goes to press WICEN is rotating operators in operating positions in Alexandra (main emergency services base), three operators, and Narbethong, four operators. In Alexandra, three operators are providing operators for the Country Fire Authority (CFA) and the Department of Sustainability and Environment (DSE) networks. At Narbethong, four operators are providing communications on amateur spectrum on HF (80 metres) and VHF (6 metres) for the Murrindindi Shire Council in disaster recovery operations.

Current weather forecasts suggest that WICEN may have a further week of providing assistance, rotating volunteers to minimise the impact on individuals.

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Our Country

Editorial

continued from page 2

ABC Radio and TV, SBS, Seven and WIN (Nine) networks all originating from the site.)

Ken VK3ALA at Jindivik lost the shed that housed his shack, but had most of the radios in the car The shed contained "a lot of memorabilia". He lost all the hay he had recently purchased, some other sheds and also a stallion. The houses are basically OK (he has two houses in the area). The West Gippsland UHF repeater will have been lost - it was in Ken's shed. The Jindivik area was impacted by the spread of the Bunyip Ridge fire.

The fire went close to the QTH of John VK3ZRX (Traralgon South), but his house and all the family are OK. Henk VK3CAQ (not very active over the last couple of years) had a very tense weekend - the roads to his location were cut, as was power. He and his partner had planned to stay and fight, but the fire did not end up too close – probably about a kilometre away.

I am sure that more news will come out in the coming days. My thoughts are with all that may be impacted by these fires - I am sure that there will be many in other areas of Victoria.

Further afield, I can report that Fred Swainston VK3DAC, the WIA RTO principal, is on watch at his property near Healesville - fire came within 500 m before a wind change. He is still on alert.

I am not sure about Doug VK3UM - the Kinglake fire was threatening Glenburn from the west and the Murrindindi fire was close to Doug's location according to the Saturday fire map. I tried to ring Doug this morning, but it sounds as if the local exchange is out of action. The DSE map of the Kinglake complex this morning has the burnt area as very close to where Doug is located, if not around it.

Amateurs have been active with RECOM, assisting the Red Cross with registration records of those evacuated. One of the RECOM operators is Rob VK3EK, who was busy most of the weekend with the registration traffic.

WICEN Vic was activated late yesterday to assist with communications at Kinglake and Alexandra.

Other amateurs have also been busy through their associations with other community based organisations, including CFA, SES and Ambulance Victoria. I will not try to start listing them as I am sure I am only aware of some of the individuals at present.

All of this comes after having the Delburn complex fires close to my SW. - that fire came to the edge of Yinnar, only 8 km away. In that fire, Stan VK3PSR at Boolarra lost some sheds, tanks, pumps and irrigation pipes and a car His house was saved.

During the fight of the Delburn complex, the CFA set up its operations centre at the University campus here in Churchill - in the car park that we use for GippsTech. Things have been unusually busy at the University all last week, and will continue to be so for a while longer. The onsite catering firm has been providing up to 650 meals a day for fire-fighters and associated emergency services staff.

It has been an interesting week or so, to say the least!

Thanks to all for your thoughts for everyone impacted by and/or involved in any manner with these fires.

I am sure that there will be more assistance required as the pictures become clearer over the coming days with the various fires.

Cheers,

Peter VK3KAI"

Now that more details have become available, we are all aware that the fires mentioned above have had devastating impacts on property and lives. In addition, there were several other fires started on the same hot, dry windy Saturday.

I was wondering about one particular friend, not an amateur, as he and his family live in Callignee, south of Traralgon. The fire destroyed 57 out of 61 houses in Callignee! My questions were answered during the News coverage on Monday night – they were on camera at the Traralgon Evacuation Centre. The people were safe, but the house is gone!

News of other amateurs

Early on the afternoon of Tuesday 10 February, this report was distributed by Doug Friend VK4OE, again on the vk-vhf reflector:

I have just spoken to Bev and Doug McArthur on the telephone, being the first landline call they have received in four days due to local phone services being down. For those who are not aware, the severely affected towns of Kinglake and Strathewen are really only over one heavily timbered range to the South from them, and Marysville is only about 2 km away in the same valley.

Doug and Bev are fine but very tired due to minimal sleep, and all their sheds and equipment are still intact, but that is even amazing because of the amount of ash and other hot/flaming debris that has bombarded their area recently. Doug has been manning fire tankers and Bev has been assisting with local UHF CB communications. Doug inspected his big shed just recently and everything inside is covered with grey ash.

Doug appreciated my call and wanted me to post this message, reminding everyone that he and his community are not yet out of danger. Visibility there is presently only around 50 metres as there has been a wind change and another fire front is now approaching from the South, originating in country already burned in the last few days! Whether it comes past their place is presently beyond the realms of prediction.

I assured Doug that the thoughts of many of us are with him and the many other people affected by the recent events.

Very best wishes,

Doug Friend VK4OE,

Brisbane.

The fires are continuing to burn, with crews working hard to bring them under control. The media have reported new instances of arson in the north-east of Victoria. WICEN Victoria has been active in providing communication support, primarily to municipal operations as recovery efforts commence, from what I have seen to date.

Given the huge areas impacted by these fires, other amateurs are likely to have been directly impacted. I am sure that all amateurs extend their best wishes to all such amateurs, as well as to all others who have suffered from both fire and flood.

At least one amateur repeater in the north-east has been impacted. As I noted above, my local club has also lost a repeater – VK3RWD. There is the potential that individual amateurs may have lost everything, including their homes.

continued on page 11

Assembling and operating the Elecraft K3 transceiver

Chris Meagher VK2LCD

The Elecraft company in California USA, relative newcomers to the ham radio market, provide a range of kit-built gear. Now they have added a world-class rig to their line-up – the K3 all-mode DSP no-solder kit transceiver, for HF and 6 metres.

When the Heathkit company made its last kit transceiver in the 1960s, it seemed like the curtain-call for ham kit-built rigs. With the introduction of integrated circuits and then surface mount components, one might have thought that any kit with up-to-date features and performance would be too complex and expensive to find a niche in the amateur market.

There were a number of successful designs and kits produced in the US for QRP and backpacker CW operators, like the OHR400 and Sierra transceivers; but an all-mode, all HF, full featured portable rig, kit-built - surely not? But it was to be surely yes, with the release of the Elecraft K2 transceiver at the 1998 Dayton Hamvention. Marketed with the slogan "I can't believe it's a kit", this compact transceiver offers modern circuitry and function in a small, rugged, no-nonsense package. Rated almost universally at 5/5 on e-Ham user reviews, it has established a reputation for outstanding receive performance, confirmed in tests by the well-regarded ARRL laboratory.

With sales of 6000+ kits by the end of 2007, the K2's success and standing at the top-end of portable HF QRP rigs was well-established, but it is a transceiver for a limited market. Involving around 40 hours or more of careful soldering, wire winding, assembly, alignment and testing, it is not a task for the beginner or faint-hearted ham. The few surface-mount components are already fitted and there is minimal internal wiring, but the construction demands high-reliability soldering skills and considerable attention to detail. You may also need trouble-shooting ability, as I did due to my poor soldering of a toroid lead in the power amplifier.

There was clearly a demand for a portable transceiver that would offer the features and performance of the top rigs by the big manufacturers, easy to assemble, but without the hefty price tag. Elecraft's answer was the K3, the development of which remained a well-kept secret until its release at the Visalia, California DX Convention in April 2007.

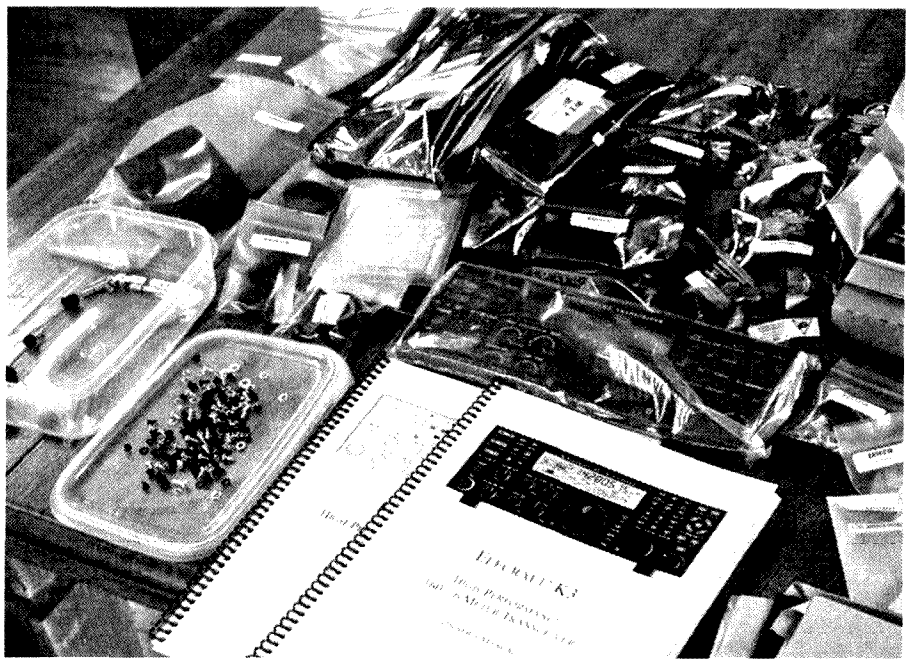


Photo 1: Just out of the box

What you get

Should you place an order, be prepared to wait for that white carton. This is definitely no instant-gratification purchase. The company partly funded the initial production run of 500 kits with a 50% deposit (which is now not needed). Demand has outstripped supply such that there is a current waiting period of over four months. As at July 2008, approximately 1160 have been shipped, the majority to the US, though quite a few are popping up in VK.

The rig can be ordered factory-assembled, or as a no-solder modular kit. The basic version gives you a 10W all-mode transceiver for HF plus 6 metres, with the stock 5-pole 2.7 kHz filter. It will actually do 12 W on SSB. In addition, the K3 provides transmit coverage of the 60 metre (5 MHz) band. Options include an upgrade to 100 W, sub-receiver, a range of Inrad 8-pole roofing filters, general-coverage receive, on-board ATU, transverter outputs, and more. Note that you need to install a 13 kHz filter for use on 6 metres FM.

The basic version has full DSP, with configurable noise reduction, blanking and notch, plus TX and RX parametric equalization. IF width and shift adjustments are included. As with the K2, front panel space is saved by dual functioning of most button switches: tap for the main function and short hold for the secondary function. Some of the rotary controls also select their functions in this manner.

There are plenty of memories: 100 general-purpose and 80 per-band. Of the latter group, 44 are accessed quickly by the 4 fast-memory buttons on the right-hand side of the front panel. These

could prove quite useful where you want to quickly jump a large segment of a band, for example in contesting. The rig has the ability to scan, either with the receiver muted or open. You could, say, sit down and eat your lunch while the rig hunts through a selected portion of the 20 metre band, rather than be trapped at your desk. You can also scan through selected memories.

The LCD display is fairly basic, amber colour only. It shows VFO A and B frequencies, configurable dual-bar graph, pass-band filter graphics, and various annunciators and icons. There is no spectrum scope. Should you want this feature, there are third-party units available, and you will need to install the optional transverter module, which provides a buffered feed from the first IF.

The saving in weight due to the absence of a 240 V power supply, and the compact size, make for a very transportable rig. This is the one aspect that sets the K3 apart from other high-performance rigs. Elecraft wisely chose to stay with their core market rather than competing directly in the heavy desktop arena. The kit unit is quite compact at W x H x D of 272 x 254 x 102 mm. It weighs in at 3.85 kg with all the options installed. My rig weighs 2.9 kg with one option fitted.

Details of the circuitry are beyond the scope of this article, except to mention that it uses dual-conversion with IFs at 8.215 MHz and 15 kHz, after which signals go to the DSP.

Circuits are largely controlled by firmware, up-dateable free via the internet, as are complete schematics and manuals.

Assembly

My K3 kit arrived very neatly packed and the first task was to inventory all the bits. Before unpacking it, you need to organise a well-lit uncluttered work-space, preferably where you can leave everything undisturbed ready for the next session. See Photo 1.

The kitchen table is not recommended, nor are areas accessible to inquisitive persons or animals. Most of the boards are sensitive to ESD (electrostatic discharge) and can be damaged in an instant by an ungrounded hand. My kit had all of one particular type of screw missing, so rather than wait for the US mail I got some from a local hobby shop for a few dollars. Most of the screws, nuts and washers are all mixed up into one bag and it is a good idea to sort them out into one of those plastic fishing tackle containers or similar.

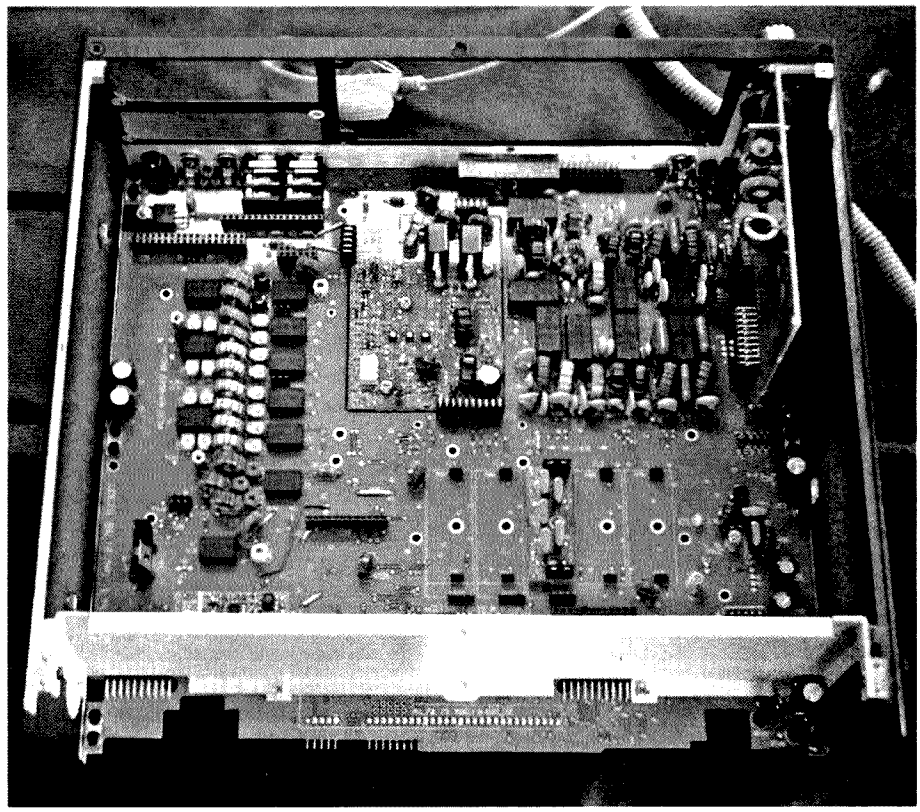


Photo 2: Assembly in progress

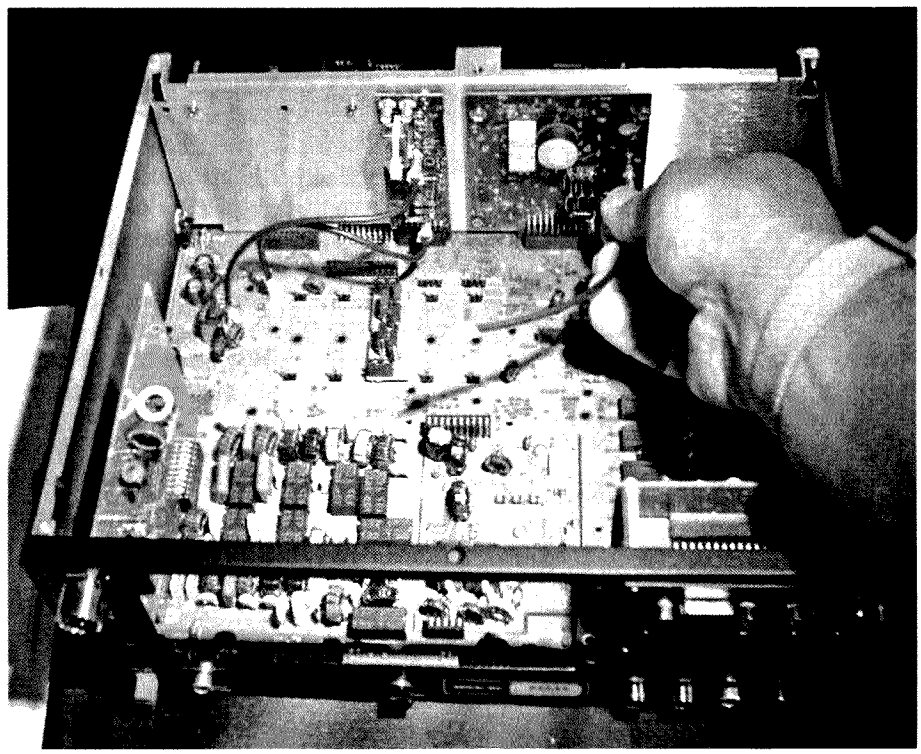


Photo 3: The transceiver nearing completion

Before starting the assembly, set out an anti-static mat with wrist strap and the few tools required. Most of it is done with a No.1 Phillips head screwdriver and your (earthed) hands. A soldering iron is



Photo 4: The completed K3 radio, with the earlier K2

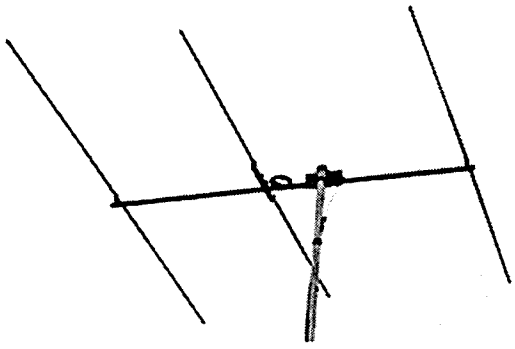
only required to make up the 12 V power lead. Take care to do everything exactly as described in the manual, ticking off each step on the way. Particular attention is needed to the length of screws and the placement of stand-offs and lock-washers. The assembly manual is clear and well illustrated. Check first on the website as there may be revisions, and paste or copy these into the manual before starting.

The K3 uses a lightweight design which relies on the rigidity and strength of the 7 panels, which join together using special screw connectors around the edges. There is no discrete chassis as such. Integral to the structure is the main board which carries most of the RF circuitry. Into this "motherboard" are plugged the front panel board and boards for audio and digital input/output, antenna, noise blanker, mixer and low-power amplifier. The DSP, TXCO and synthesizer are fitted to the front panel board. Additional boards can be plugged in for the various options.

In Photo 2, you can see at centre rear the low-power amplifier board, which plugs into an opening in the RF board. The output transistors are underneath and bolt to the rear bottom panel which acts as the heatsink. Fortunately, the tabs of the transistors are earthed and so no insulators are required. The 5 slots for crystal roofing filters are on the front right of the RF board. The basic 2.7 kHz

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Photo 5: The K3 transceiver, rear view

5-pole filter has been installed in slot 3. Later on, the 13 kHz (FM) and 1.8 kHz 8-pole filters were added. The antenna input/output board is the one mounted vertically in the top right corner.

At the top of Photo 3 can be seen the front panel board installed in place. The two boards on the back of this are the reference oscillator (left) and the synthesizer (right). There are 3 internal plug-in coaxial cable connections. Note the anti-static wrist-strap which connects to the work mat. This is absolutely essential to prevent ESD damage.

Most of the assembly was quite plain sailing. There were a few fiddly bits where it would help to have very small and nimble fingers. A headset with a good lamp helped quite a bit, and the old 'blu-tac' on the end of the screwdriver trick came in handy. Connecting the front panel board was the trickiest part, requiring care and patience. I was not counting, but I think it took about 10 hours altogether, at a fairly leisurely pace.

Photo 4 shows the completed K3, with the K2 for comparison. The similarities of style and layout are obvious.

Setup and controls

The K3 is quite straightforward to get on air, after first setting up the filters as detailed in the manual. There is a test and calibration procedure to be done, but the rig does most of the work and no test equipment or component adjustment is required.

Quite a bit of time was spent getting familiar with the basics, then attention turned to customizing the radio. There are two menus. The main menu has the more frequently-used settings such as VOX sensitivity, repeater offset, display brightness/contrast, etc. and there is also an alarm you can set to wake it up.

The configuration menu is much more complex, with settings for all kinds of things to do with RX, TX and testing. This is also where you set up the filters. I found it to be quite logically structured and mostly straightforward to use. I did get confused at one point with setting up for 6 metres, but this was because there was a revision of the manual of which I was not aware. The lesson here was to check the website for current information before any new installation or if things don't seem to work as expected.

Having already used a K2, I found it easy to use the front panel on the K3 which is similarly set-out, albeit with more knobs (9) and buttons (35). I rather like the no-frills, somewhat military style of the panel, but it may not be attractive to all. The feel of the buttons is positive and the turning of knobs is smooth and precise. If you like, you can easily remove the VFO knobs with an Allen key wrench and adjust the spin resistance. As you assemble the kit you get to do this anyway.

The control labels and the LCD panel are all easy to read. I liked the uncluttered display and annunciator positioning; when operating under pressure it is easy to glance and see what is happening. Note that the controls are not backlit and you will need some light on the front when operating at night. The compact size means that some of the more expansive panel features seen on big rigs are absent from the K3. For example, band and mode are selected by

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up/down rockers rather than individual buttons.

Connections to the back panel are fairly standard. You can connect phones and mike to the back as well as the front and there is line-out audio in mono and stereo. Stereo is used for quasi-stereo and binaural effects which supposedly can help with weak-signal copy. It is claimed to be less fatiguing over long periods such as in contests but I am yet to try this feature. There is an RS232 port for computer connection and a 15 pin accessory port which can output band data, carry digital data, and control transverters. The 12 volt supply comes in via Anderson PowerPole connectors, pretty much the portable standard in the US. When power is switched on, a 12 V outlet provides up to 500 mA for any accessory device that needs to come on with the rig. There is only one antenna socket; two would be nice to have without having to fit an option module. Photo 5 shows the rear panel; the large blank space is where the fans go in the 100 watt version.

I recently fitted the optional KXV3 board which in addition to transverter lines, has in/outputs for a separate Rx antenna (such as a Beverage for the low bands) and a first IF tap for a panadaptor. Regarding the latter, there are units on the market which suit the K3 such as the LP-PAN but you need a computer hooked-up. I have decided to wait in case Elecraft produce a stand-alone unit. When portable it would be good to have the option of taking a light-weight bandscope without having to carry a laptop. But it could be a long wait.

Overall, I am happy with the controls. A good feature is that you can set up a fast tuning step which is controlled by the RIT/XIT knob. This functions similarly to the "select" knob on my FT-817, and I find this excellent for contests. Unfortunately the selectable steps are only 2.5, 1.0 and 0.1 kHz, and for me it is annoying not to have 0.25 and 0.5 kHz steps. Also you have to go to the configuration menu to adjust this, though I plan to see if I can put it into a front panel button as a special function. Direct frequency entry is easy. The RIT/XIT is well set up, with LED indicators for +,0,- offset and also next to the transmit LED, there is a delta-f LED, which comes on if there is a TX/RX offset, due to RIT, XIT, or split operation.

The operating experience

After reading various reviews praising the K3's receiver, expectations were high and the rig did not disappoint. The sensitivity, combined with the noise fighting capabilities of the DSP unit, made for good readability of some very weak SSB. Nevertheless, my home location is remote and solar-powered and therefore very QRM quiet.

On CW, some extremely weak signals could be plucked out. Unfortunately my Morse skills are almost non-existent due to lack of practice, but I imagine that the K3 might be a delight for a good operator. The auto spot tuning function is very helpful. I tried the Morse to text decode feature and at first this was disappointing, but a careful reading of the manual helped me to set it up to get better than 90% sensible copy of the WIA 80 metres automated Morse transmission. It seemed not to like the slow Morse, often breaking 4 and 5 dot/dash letters into smaller components, giving lots of Is, Ss and Ks. The rig is also RTTY and FSK decode capable, but this was not tested.

On transmit, everything functioned well, after a problem was sorted out. This took the form of a missing circuit board link which snuck through quality control on a run of units, and which prevented the front-panel mike from operating correctly. The result was dreadful distortion on my first serious transmission. Naturally I was appalled, having no idea what was wrong, let alone how to fix it. However the ever-helpful Elecraft forum and support people were there and it was business as usual after removing the offending board and soldering in the link with hook-up wire.

Audio reports have been good, though if you crank up the compression to the higher levels, it will not be hi-fi. I found moderate compression levels very helpful in getting through QRP on 80 metres to north-east NSW on a recent remote portable stop in East Gippsland. I was using the tiny 20 W Elecraft auto-tuner into a G5RV slung up about 7 metres into the mountain ash forest.

I gave the rig a workout on the NZART 80 metres Memorial Contest and was able to copy through static stations that others seemed unable to hear. When things got a bit cramped at one stage, I selected the 1.8 kHz filter, which did an excellent job of cutting out strong close-in stations, while maintaining good readability.

It is expected that the voice recorder option will be available soon. I will probably get this, as being able to record and play voice would be very useful for long contest operation. It also allows voice announcement of controls.

Rather than reproduce the factory specs here, you can check them on the Elecraft website. While you are there, download the QST (ARRL magazine) review and the laboratory test comparisons, which are a real eye-opener when you see the receiver figures compared to some more expensive rigs.

Summing up

The K3 is arguably at the very top when it comes to portable HF rigs. It is rugged, light weight, and easily customised. Everything is geared towards maximum performance on HF and 6 metre ham bands. If you want general coverage receive there is an optional module which adds 8 extra band pass filters. With noise reduction engaged on the static-free bands, signals seem to just pop out of silence. The standard of components, circuit boards and hardware is excellent. So is the cabinet finish and labelling.

It is unusual if not unique to see a transceiver designed entirely by active hams, with downloadable firmware revisions which take on board the comments of users. Some have complained about the slow delivery, suggesting that the release was premature. However, no one is twisting your arm to buy one and I suspect that without the process of accumulating forward orders to finance development and manufacture, this radio would never have been built.

The price of the basic kit is very reasonable for a high-performance transceiver. However, if you install all the options including 100 watt PA, full independent second receiver, and on-board antenna tuner, it will set you back a fair bit more. The good thing is that it is not just a one-size fits all. You can fit what suits your needs and budget. GST, currency conversion and customs clearance charges add quite a bit, but at least there is no middleman (or men). I should mention that the price does not include a mike. It is up to the buyer to

choose between hand mike, desk mike and headset, or adapt the pin-outs of an existing mike to suit. The Heil headset and a footswitch or VOX make a very good combination for contesting.

A very big plus for the K3, or any Elecraft product for that matter, is the outstanding customer service and support network. When stumped by a firmware change, I sent an email to the forum and got the information I needed from a US operator in twenty minutes. Likewise, the company support people will promptly and politely attend to your inquiries.

It is not real kit building like the K2, but the assembly experience I would say is definitely worthwhile. It engenders a deal of pride and you save quite a few dollars. I would recommend the kit version unless you are mechanically challenged. Compared to a K2 kit, it is a breeze. Also, you get a much better appreciation of what is inside the box; and yes, it is only available in black.

To operate, I find it to be a delight whether in the field or on the desk. It looks and behaves like a precision radio. My K2 is now reserved for extra-light operations, but that older, smaller brother (sister?) of the K3 is still the ultimate in kit challenge and satisfaction. Or if you like portable CW QRP, take a look at the K1, or even the tiny KX1 with mini-paddle. Judging by the forum postings, there have been a few production glitches, but it seems everyone ends up satisfied. I can forgive the two problems I encountered, since they were easily fixed. The level of access to support, right up to the designers themselves, is outstanding in the world of ham transceiver manufacturing.

The K3 is a transceiver that would suit HF operators who want portability and high receiver performance at a moderate price, plus a dose of the owner-builder experience. Other considerations are the ability to customize the rig and to update firmware. With the Aussie dollar almost on parity with the US (at the time of writing), it represents great all-round value. *(Readers should consider the current exchange rates. Ed.)*

Please note that this is an unsolicited article and the author paid full price for the kit.

For further information see:

- www.elecraft.com
- the K3 wiki at www.zerobeat.net.mediawiki/index.php
- www.eham.net/reviews/.
- Heathkit history at www.heathkit-museum.com
- CW backpacking at the wilderness radio site: www.fix.net/~jparker/wild.html
- the LP-PAN panadaptor at www.telepostinc.com

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Editorial

continued from page 5

Even in the toughening economic climate, our countrymen are showing their generosity – several organisations are calling for donations, and funds are rushing in to those appeals. Such support is not surprising, given the devastation – Victoria Police are predicting that over 200 lives will have been lost, and the impacts of properties has been massive.

As further information comes to hand, I am sure that there will be some requirement for action from some or all of us in some form. Perhaps providing assistance: to individuals, through WICEN or other agencies, or even simply contributing to one of the relief appeals.

I am sure that we are all wishing the best to all who have been impacted by these events.

Closing remarks

Enough reflection on the past few days.... This Editorial is already far too long!

Perhaps it was best that I decided against attending Wyong – it was much easier being at home and considering the actions that I might take if the wind direction had changed to bring the fire towards the town. From all accounts, the event went well. I look forward to some reports in due course.

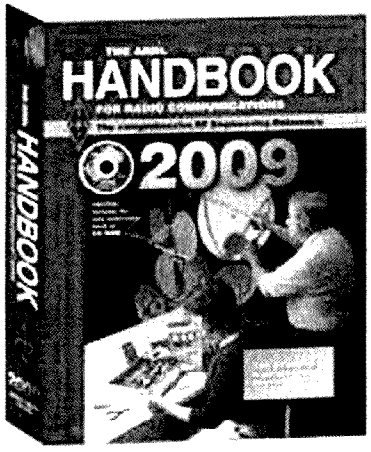
At the WIA Office, preparations are full steam ahead with all the paperwork for the AGM to be held in May.

Again, I ask that you write up that latest project as an article for AR. Our stock of articles is dwindling, so the turn around time between submission and publication should be shorter than average.

73

Peter VK3KAI

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A useful up-converter for the HP-8922S

Peter Whellum VK5ZPG and Mike O'Ryan VK4YNQ

An up-converter has been designed for surplus GSM HP-8922S test sets with inbuilt spectrum analysers that removes the 10 MHz lower limit and allows the spectrum analyser to be used for general purpose testing over the HF band between 0.3 MHz to 30 MHz. The up-converter may be used with other microwave spectrum analysers as well to extend their usefulness down to the HF band while maintaining signal amplitude integrity.

1. Background

I was pleasantly surprised when I recently purchased a HP-8922S GSM Test Set from eBay for well under US$700. This deal also included a unit (the HP-83220E) that extended the frequency range to between around 1.7 to 1.9 GHz but I found no real use for it and stripped it for parts, many of which, and particularly one of the step attenuators, proved very useful in the construction of an up-converter.

The HP-8922S provides a number of useful functions for fellow amateur radio enthusiasts, such as an inbuilt spectrum analyser with a frequency range of 10 MHz to 1 GHz, a synthesised RF signal generator between 10 MHz to 1 GHz with 1 Hz resolution that has an output level between -14 dBm to -127 dBm, a 25 kHz audio signal generator with 0.1% distortion, an AC voltmeter with 100 kHz bandwidth, a DC voltmeter (max of 42 V DC), a 1 kHz audio distortion analyser with a measurement minima of 0.1%, several audio filters and detectors (peak, average, rms) and a 50 kHz audio oscilloscope. There are also a lot of other mobile phone test functions that will simply not be used. Overall, a useful piece of test equipment for the shack above 10 MHz, but the question was how to make this useful for the lower HF bands, 40 metres and lower?

Discussions with Mike O'Ryan VK4YNQ saw the kind offer to provide a design of a suitable up-converter that extends the useful range down to 0.3 MHz. The following is Mike's discussion on this design, and calibration of the unit.

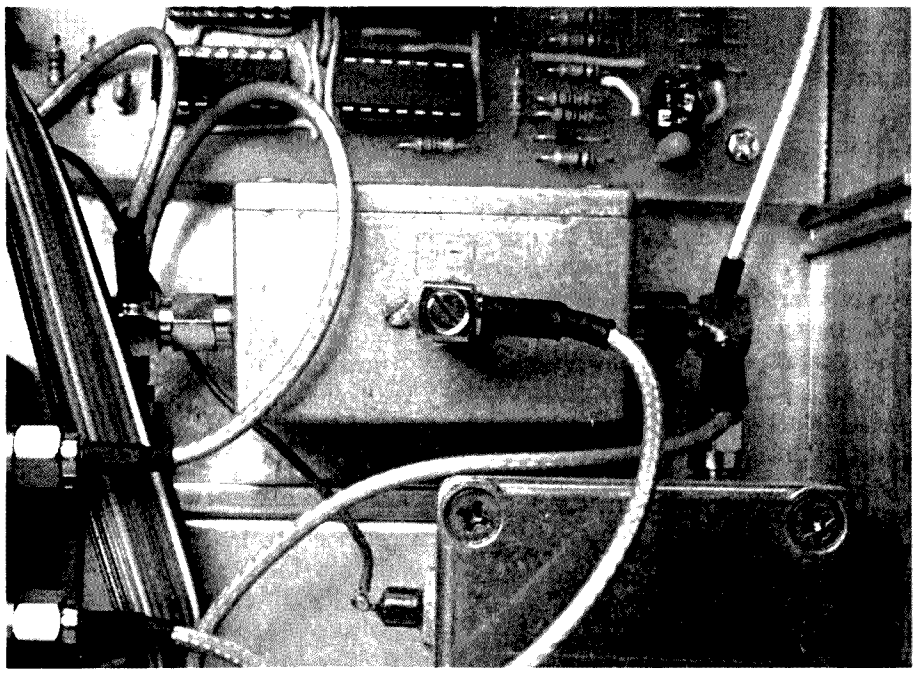


Photo 1: Mixer in the centre – SRA-3 double balanced mixer mounted internally on a small PCB.

2. Technical description

2.1 The design approach

After several discussions with Peter VK5ZPG on his GSM Test Set HP-8922S acquisition and his need to extend the useful range down to the 455 kHz region for radio IF alignment and for SSB crystal filter tuning, several design ideas on an 'up-converter' began to form. The chosen design approach for the up-converter was to use readily available MMICs for wideband amplification and to use a commercially available double balanced mixer for ease in construction. Conversion accuracy was also an important consideration to achieve since the up-converter is being used as the 'front end' for the HP-8922S spectrum analyser, and indeed, could equally be used by other microwave spectrum analysers such as the HP-8969 that also have a lower limit of 10 MHz. Amplitude levels needed to be preserved in the frequency translation to a higher frequency that is usable by the spectrum analyser (above 10 MHz).

A design goal was therefore to set the RF input upper frequency limit to 20 MHz, and to have a lower input frequency of 0.4 MHz, as this was considered sufficient for most radio amateur activities in performing 455 kHz IF alignments and leakage measurements. Amplitude accuracy of better than +/- 1 dB was highly desirable too, so that absolute power levels in dBm could be read off the spectrum analyser display and any converter loss or gain were to be in 10 dB step multiples to keep power level readings simple. For HF band use and experimentation, the local oscillator (LO) used needed to be higher in frequency by at least twice the user RF bandwidth so that minimal filtering would be necessary, while maintaining a good, spurious free, dynamic range. One last desirable feature was to add a switchable low noise amplifier (LNA) to improve the Noise Figure (NF) of the spectrum analyser so that low level

RF signals dynamic range could be increased to comparable to the NF of most HF communications receivers (typically between 8 to 16 dB).

The technical design specification list soon formed and the following was settled upon for the basic up-converter design:

Converter input frequency range	0.4 to 20 MHz (+/- 1 dB)
Usable range	0.1 to 30 MHz (- 3 dB)
Converter LO frequency	60 MHz.
Conversion loss	0 dB nominal.
Converter maximum input level (0 dB attenuation)	-20 dBm
RF Input Attenuator	10 dB steps, 50 dB range or more.
Switchable LNA gain	nominally 20 dB
Up-converter noise figure with no LNA	15 dB
Up-converter noise figure with LNA	6 dB
Input and output impedances	50 ohms

A block diagram of the up-converter is shown in Figure 1. The nominal power levels through the blocks are also shown. The goal is to achieve a net 'zero dB conversion loss' so that the output signal levels are directly representative of the input RF power levels and only translated or 'up converted' in frequency (60 MHz in this case) as shown in Figure 2 - that is within the spectrum analyser's operating range.

2.2 Input Low Pass Filter (LPF)

The sensitivity to out-of-band RF emissions at the converter's input (and the creation of spurious responses) is eliminated by band-limiting the input RF signals with an input filter. A sixth order, inductive input Butterworth LPF is used to provide a maximally flat pass-band response to 24 MHz (-0.1 dB) and a design cut off frequency of 30 MHz (-3 dB). A seventh order filter capacitive shunt input could equally have been used but an inductive input was considered more tolerable by test circuits for those out of band frequencies above 30 MHz.

Three inductive filter elements are used, L1 being an air coil and two (L2 and L3) wound on T50-10 small powdered-iron cores that have an operating frequency range of 30 to 100 MHz. This allows the inductors to operate well past the filter stop band. The capacitors are standard E12 value small ceramic types. The inductors do have lower operating Qs than the ceramic caps which results in an upper pass band insertion loss of 0.2 dB at 20 MHz. The input filter is terminated in a resistive 2 dB pi pad that helps the filter to maintain the design characteristics when there is no input step attenuation, as well as to improve the 50 ohm input matching.

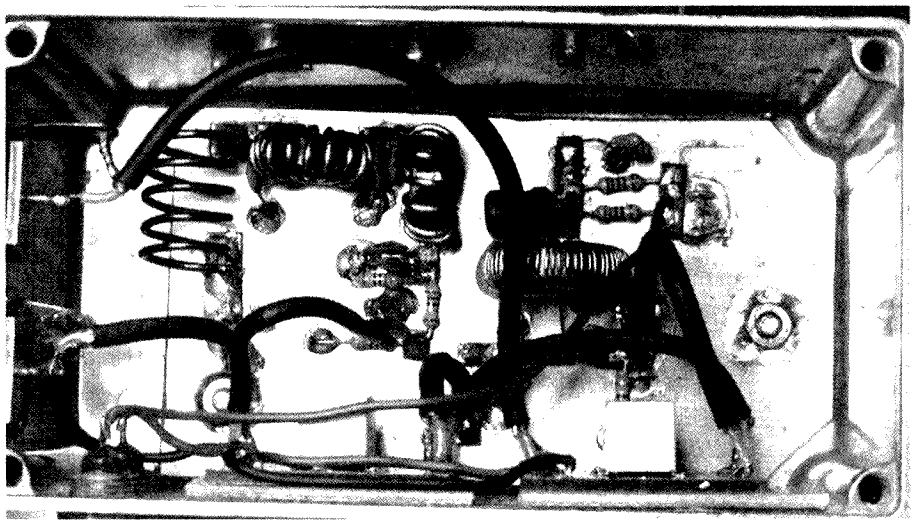


Photo 2: Input LPF and PI attenuator pad, at left. LNA is at right. Omron relays and their PCBs glued to lower side of diecast box, at bottom.

2.3 Input Attenuator

To allow a greater dynamic range, an input 10 dB step 50 dB to 70 dB attenuator may be used to increase the usable RF input level to nominally +20 dBm or more. A front panel manual rotary attenuator with 50 ohm impedance and specified for 500 MHz to 1 GHz frequency is used for this purpose. These are available at quite reasonable prices both locally and overseas. Where front panel space is crowded a remotely controlled attenuator may also be used (a

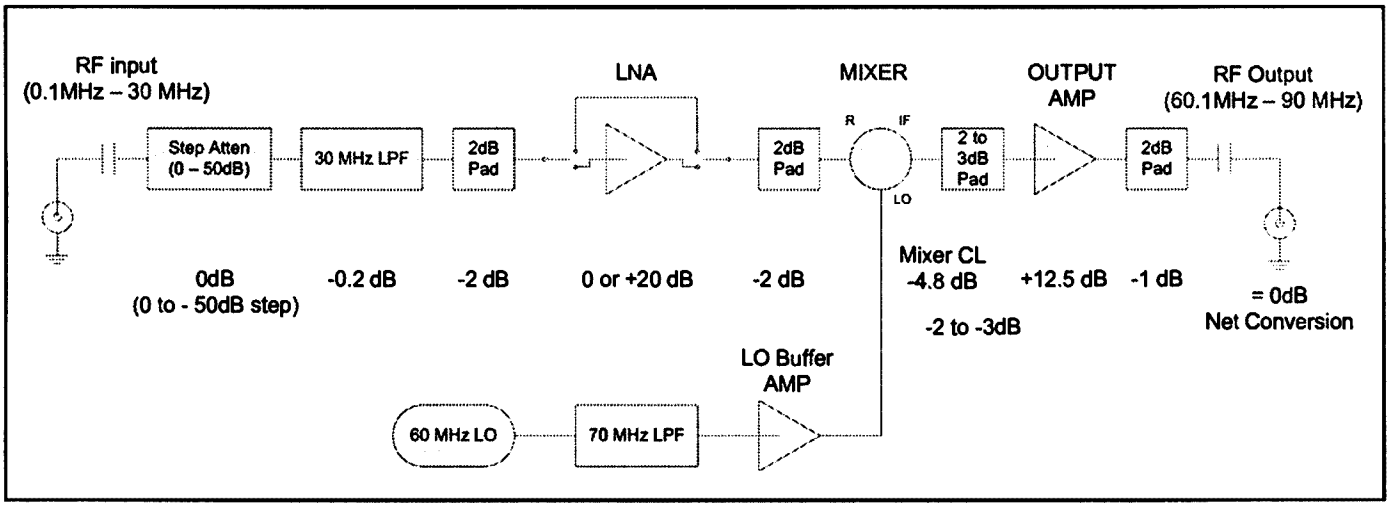


Figure 1: Block diagram of the up-converter.

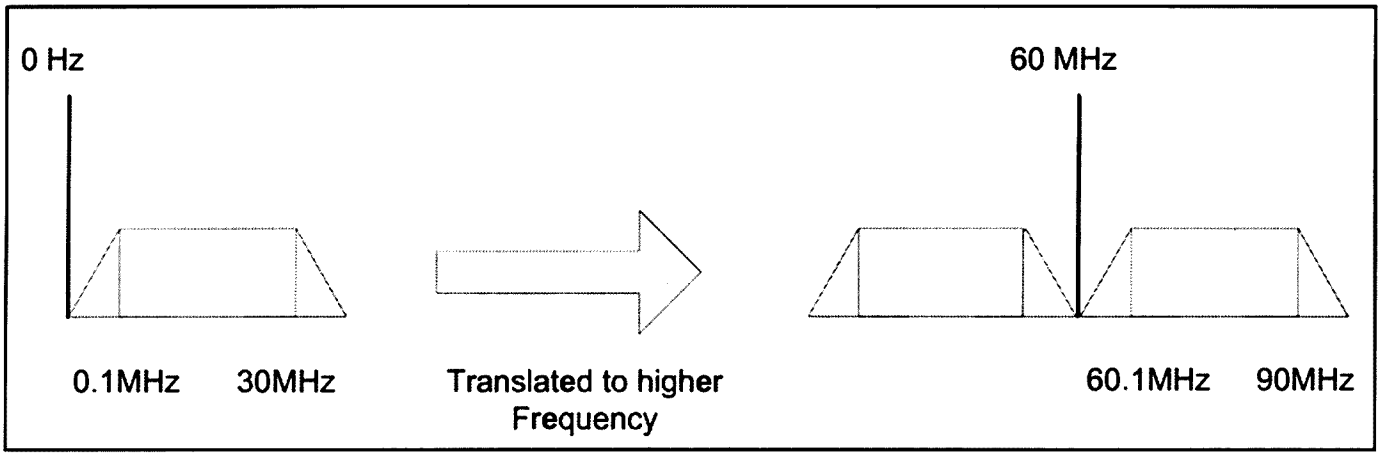


Figure 2: Frequency translation.

detailed design for a remotely controlled attenuator using common HP-33321C parts is the subject of a separate article). The RF input level to the mixer should be kept to a maximum of –20 dBm to keep the harmonic spurious levels to a low level.

2.4 Low Noise Amplifier (LNA)

Typical spectrum analyser noise figures (NF) vary between 30 to 35 dB with 0 dB RF input attenuation. To improve the NF of the spectrum analyser, a low noise amplifier (LNA) is switched into the signal path. Using an ERA-5 wideband amplifier MMIC (IC7) with an inherent NF of 4.5 dB and a gain of 20 +/-1 dB, then the overall NF for a spectrum analyser (with a NF of 30 dB) and the up-converter is improved to 12.5 to 13 dB. Put another way, the signal sensitivity of the spectrum analyser is improved by 17 dB.

The individual component contributions to gains and the overall noise figure for when the LNA is switched in circuit, is shown in Table 1.

The ERA-5 output bias current is set by DC bias resistors R7 and R14 from a regulated 12 V DC supply. The combination of bias resistor(s) and RFC is in parallel with the 50 ohm output and should be greater than 500 to 600 ohms to minimise the shunting effect across the 50 ohm output at the operating frequencies. To cover 2.5 decades (0.1 MHz to 50 MHz) with toroidal RFCs, a series combination of two RFCs is needed, a 26 uH RFC (L4) that covers 3 to 30 MHz, and a 200 uH RFC (L7) that covers the 0.1 to 3 MHz frequency range. A parallel 470 ohm resistor (R15) across the 200 uH RFC suppresses the series resonance that occurs within the pass band below 30 MHz due to capacitive resonance in the RFC winding.

The LNA is switched in and out of circuit with Omron-G6Z 50 ohm RF relays that have an isolation of 60 dB or better at 30 MHz. The prototype was constructed around a relay kit purchased from MiniKits in SA and modified for the up-converter. The MiniKits' LNA, with small component changes, could also be used for this project's LNA.

2.5 The Mixer

For the up-converter with a required low frequency response of 0.4 MHz, and a usable goal to 0.1 MHz, then using a double balanced ring mixer (DBRM) with corresponding low frequency response is needed. A commercial 'Level 7 mixer' (7 dBm LO level) was

Component Data	Pad1+Atten	Pad2	LNA ERA-5	Mixer	Pad3	G ERA-6	Pad4	SA
Gain (dB)	-2.2	-2	20	-4.8	-2.5	12.5	-1	0
NF (dB)	2.2	2	4.5	5.8	2.5	4.5	1	30
Gain Linear	**=10^(dB/10)**							
Gain (linear)	0.60	0.63	100.00	0.33	0.56	17.78	0.79	1.00
NF (linear)	1.66	1.58	2.82	3.80	1.78	2.82	1.26	1000.00
Running Total of cascaded linear Gains								
Gain (linear)	0.60	0.38	38.02	12.59	7.08	125.89	100	100
Running total of Friss eqn								
F	1.66	2.63	7.41	7.49	7.55	7.81	7.81	17.80
Cascaded Gain and NF(converted back to dB)								
Gain (dB)	-2.2	-4.2	15.8	11	8.5	21	20	20
NF (dB)	2.2	4.2	8.7	8.74	8.78	8.92	8.93	12.50

Table 1: Up-converter cascaded component gains and noise figures.

preferred rather than constructing from scratch, so several MiniCircuit mixers were considered for the project and are summarised below:

SBL-3	Rated at 0.025 MHz – 200 MHz	conversion loss 4.8 dB AUD $15
SRA-3+	Rated at 0.025 MHz – 200 MHz	conversion loss 4.8 dB AUD $30
SRA-6+	Rated at 0.003 MHz – 100 MHz	conversion loss 4.8 dB AUD $40
TAK-5+	Rated at 0.05 MHz – 150 MHz	conversion loss 4.7 dB AUD $40
ZFM-3	excellent low frequency Rated at 0.04 MHz – 400 MHz	conversion loss 4.8dB stand alone package with SMA connectors, cost approximately AUD $80

During construction and testing, a wide range of mixers was tried, including the ubiquitous SBL-1 and SBL-2, however their low frequency response was found lacking. The ZFM-3 mixer gave excellent results of +/- 0.1 dB amplitude flatness from 0.2 to 24 MHz but these may be difficult and expensive to source.

The SBL-3 (or better still, its newer production stablemate the SRA-3+) was selected for the final build, achieving an up-converter amplitude flatness of +/- 0.4 dB from 0.2 to 24 MHz. Any of the other mixers listed above however can equally be used and is just a matter of availability and price for the constructor.

The mixer IF output is terminated in a resistive pad that also serves as a variable adjustment for system gain. R22 is a single-turn trim pot that provides the small 1 dB system variation by changing the attenuation between 2 to 3 dB.

2.6 The LO Oscillator

A small hermetically sealed 60 MHz local oscillator (LO) made by Vectron was obtained from RFPlus, although other oscillators could equally be used here. The Vectron oscillator is a very stable, voltage adjustable (VCXO), crystal oscillator that runs off a 3.3 V DC supply. The VCXO oscillator has a buffered output that is quite capable of driving a 50 ohm load at +7 to +8 dBm output level, but has a 2nd harmonic at -35 dBc and a strong 3rd harmonic that is only -18 dBc from the fundamental. The VCXO output is attenuated and filtered with a 5th order Chebyshev low pass filter to reduce the 2nd and 3rd harmonic by a further 20 dB and 40 dB (-38 dBc and -48 dBc) respectively. The two inductors L9 and L10 are air coils. The filtered LO signal is amplified by 11 dB with a MAV-11+ MMIC (IC2), and then passed through a two element post filter to the mixer LO input that attenuates any higher order harmonic responses. R24 and R27 are adjusted for the correct output level to the LO of +7 dBm.

The MAV-11+ may be substituted with an ERA-5 and if so, then the bias resistors R13 and R23 need to be changed from 220 ohms to 200 ohms as well as re-adjusting R27 for LO of +7 dBm.

2.7 The Output Amplifier

The output amplifier uses another MMIC, an ERA-6 (IC3) that has a power gain of 12.5 +/- 0.5 dB, a high output power but with a low spurious output due to its high 3rd order intercept point (IP3). The output amplifier is operating at LO +/- RF image frequencies. In normal operation, the spectrum analyser is tuned to the upper image between 60.4 – 90 MHz for viewing the RF input frequency between 0.4 – 30 MHz.

The power gain needed from the output amplifier however, is only 8 to 9 dB. The stage gain is reduced by using the variable pad at the mixer IF output and a fixed 1 dB output pad on the up-converter output connector. Small differences in amplifier gain and component tolerances can be adjusted out with R22 over a 1 dB range. The 1 dB output pad also improves the output amplifier return losses for a good 50 ohm match.

2.8 Voltage Regulators

An unregulated DC supply between +14 to +20 V is regulated to +12 V using a LM317 three terminal voltage regulator (IC5). Current draw on the +12 V line is about 310 mA, being the sum of the following; 85mA for the output amp (ERA-6), 85mA for the LNA (ERA-6), 60mA for the LO amp (MAV-11+), 40 mA for the Vectron VCXO oscillator low voltage regulator and 40 mA for two LNA relays.

The 12 V regulator needs to be mounted on a heat sink for cooling. The +3.3 V for the VCXO also uses a LM317 three terminal voltage regulator (IC4) but does not require a heatsink.

2.9 RF Input Levels

Linear operation is mainly determined by the mixer RF input level relative to its LO drive level. Using the SBL-3 mixer with a +7 dBm LO drive level, the nominal maximum input level for linear operation is approximately 20 to 25 dB below this level so the input should be no greater than -13dBm.

With the 20 dB gain LNA switched in circuit, the maximum input RF level is reduced to -33 dBm for linear operation. The LNA is used for looking at low level signals, particularly those near the noise floor of the measurement environment, and is normally switched out of circuit. With the input attenuator switched in for higher level signals, the maximum input level is increased proportionally by the 10 dB step(s) and limited by the power ratings of the attenuator.

2.10 Schematic

(see Figure 3, next page)

2.11 Coil winding details

L1: 137 nH: air core, 5 turns, 10 mm diameter, 13 mm coil length, 12 AWG wire.

L2: 512 nH: T50-10 powered iron toroid, 13 turns, 18AWG wire.

L3: 137 nH, as for L1.

L4: 26.5 uH: T68-2 powered iron toroid, 68 turns, 28AWG wire.

L5: 1.3 uH: T50-10 powered iron toroid, 21 turns, 28AWG wire.

L6: 1.3 nH, as for L5.

L7: 200 uH: Jaycar LF1104.

L8: 0.13 uH: as for L1

L9: 148 nH: air core, 4 turns, 12 mm diameter, 10 mm coil length, 18 AWG wire.

L10: 148 nH: as for L9.

3. Construction

3.1 Overview

To minimise RF leakage, and to allow for easy build modification, the prototype up-converter sections were housed in small individual diecast boxes:

a) VCXO and buffer AMP;

b) LPF, relay switching and LNA;

c) mixer (unless you decide to use the ZFM-3 which is already packaged with SMA connectors); and finally

d) the output amp. Refer Photo 1.

Each of these stages was constructed using the ubiquitous 'Paddy-board' or 'Manhattan' method, but 'ugly style'

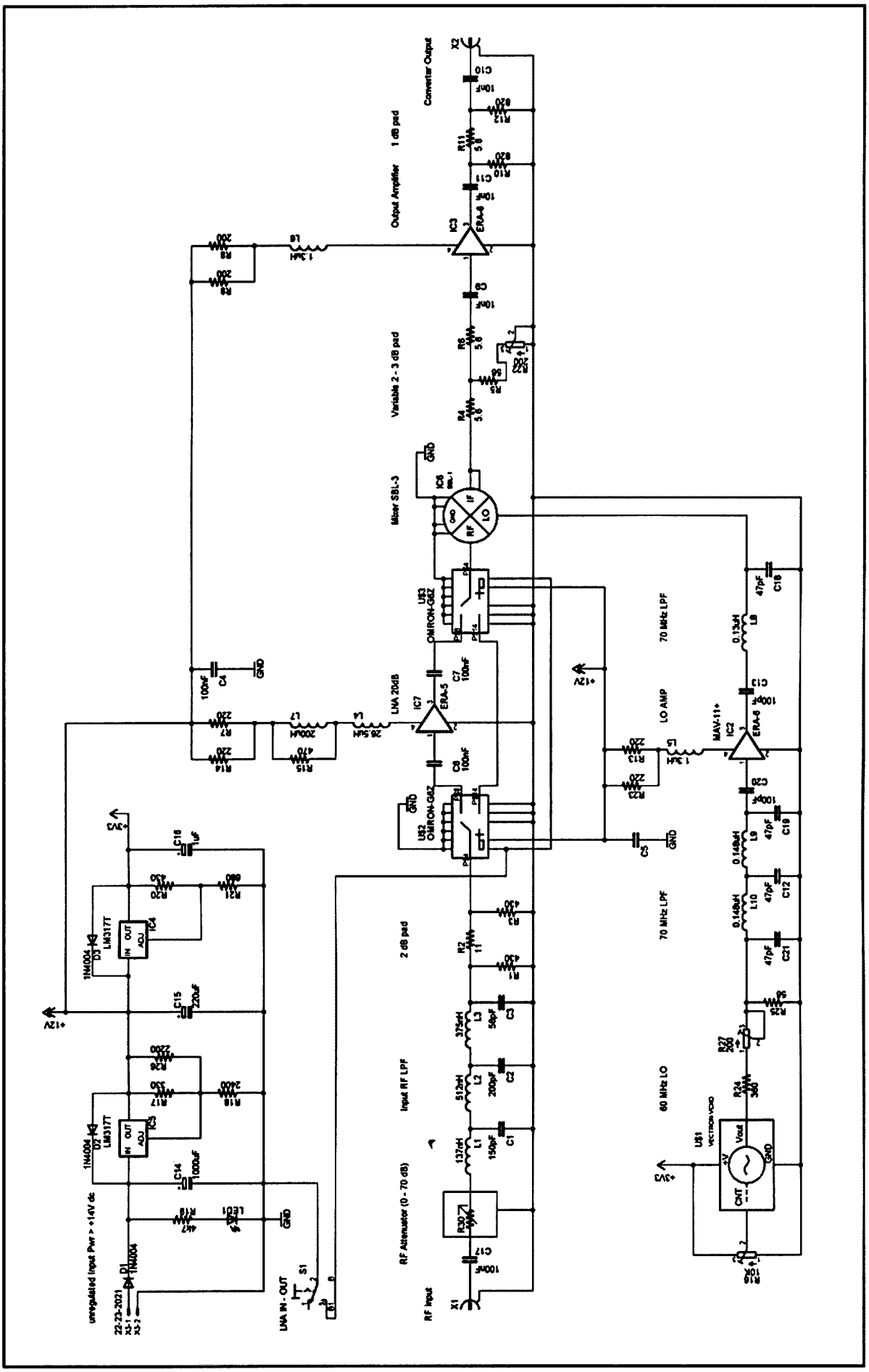


Figure 3: Up-converter schematic.

would work just as well; in both cases, good RF practice should be followed – ensure a clean layout and minimum component lead length where possible – Refer Photo 2.

SMA sockets and connectors, and small diameter Teflon coax, were used for all interconnecting RF lines, with power to each stage provided via feed-through capacitors screwed through the side walls of each diecast box.

I used a HP33321SC 0-70 dB step attenuator (10 dB steps) in my unit, ratted from the dismantled HP-8322OE, which required a pulsed switching circuit, designed by Mike O'Ryan VK4YNQ and the subject of a later construction article.

All small diecast boxes, along with the step attenuator and its switching circuit PCB, and inbuilt 240 V AC power supply, are housed as a self-contained unit in a larger diecast box measuring approximately 270 x 170 x 65 mm (WDH). Refer Photo 3.

I was fortunate in having a digital LC meter during the construction phase which proved most useful in accurately winding inductors and in the selection of correct capacitors for the various filters. Several of my capacitors were poorly marked and it is important to have the correct component values for the construction of the filter networks.

4 Testing

If you construct the converter as I did by using individual small diecast boxes, I would suggest you build one stage at a time and thoroughly test each as you go. Before applying 14 to 20 V DC, thoroughly check all of your wiring and pay strict attention to the polarity of any electrolytic capacitors and LEDs – and double check that the relevant MMIC devices are correctly orientated on your board.

If you are like me and tend to make your 'Paddy-board' builds on the small side, double check for solder blobs or component lead cut-offs that may cause a short circuit.

Ensure that you have +12 V DC and +3.3 V DC power at the relevant points of the circuit.

It is also suggested that you clearly mark the maximum input signal level on the front panel adjacent to the input coax socket. (for example,

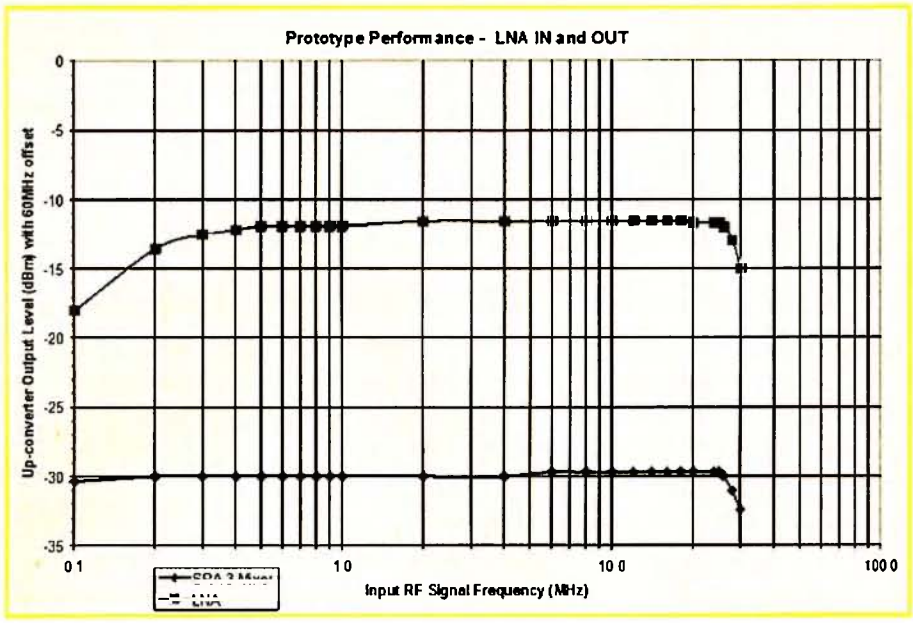


Figure 4: Up-converter frequency response – LNA in and out.

'Warning - Maximum +10 dBm (zero attenuation)').

I also found it most interesting and useful to manually plot the responses of the up-converter components, as well as the complete 'through' response of the up-converter into spreadsheets. Figure 4 shows the measured response with a -30 dBm input RF signal at discrete frequencies between 0.1 to 30 MHz and measured at the up-converter output at 60.1 to 90 MHz with both the LNA switched out and switched in. The amplitude flatness with just the SRA-3 mixer was +/- 0.2 dB between 0.2 to 26 MHz, and with the LNA switched in, the overall gain flatness was then +/- 0.5 dB between 0.3 to 26 MHz. In the prototype, the LNA gain was measured at +18 dB rather than the expected +20 dB but is still very useful in bringing the low level signals out of the noise for spectrum analyser display.

It was during my final testing for overall performance that Jon Wright of RFPlus suggested I swap the IF and RF ports of the double-balanced ring mixer (SRA-3) to improve the low

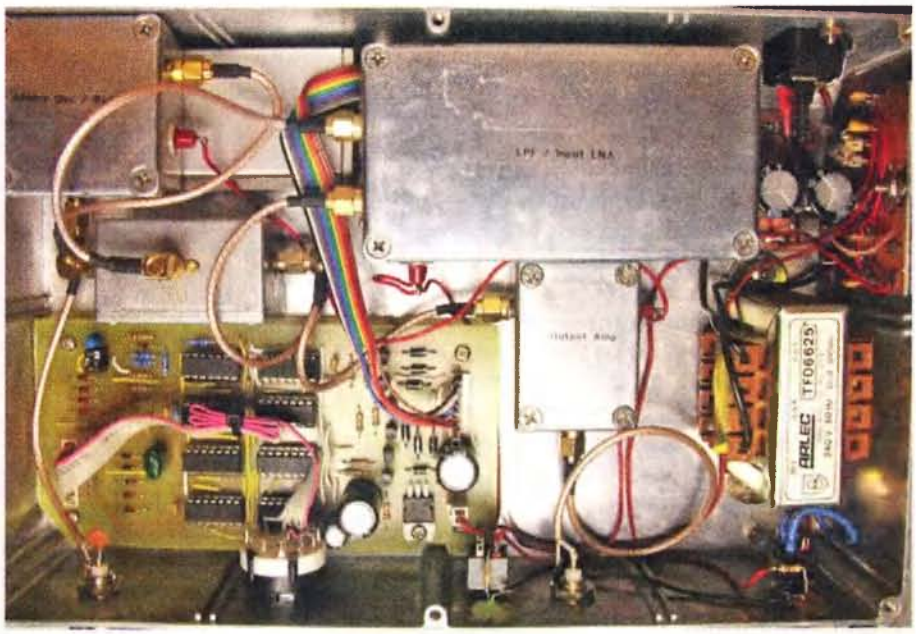


Photo 3: Up-converter. (Attenuator switching bottom left, mixer left of centre, LO top left [HP33321C attenuator beneath], LPF and input LNA top right of centre, power supply top right, output amp beneath LPF, right of centre)

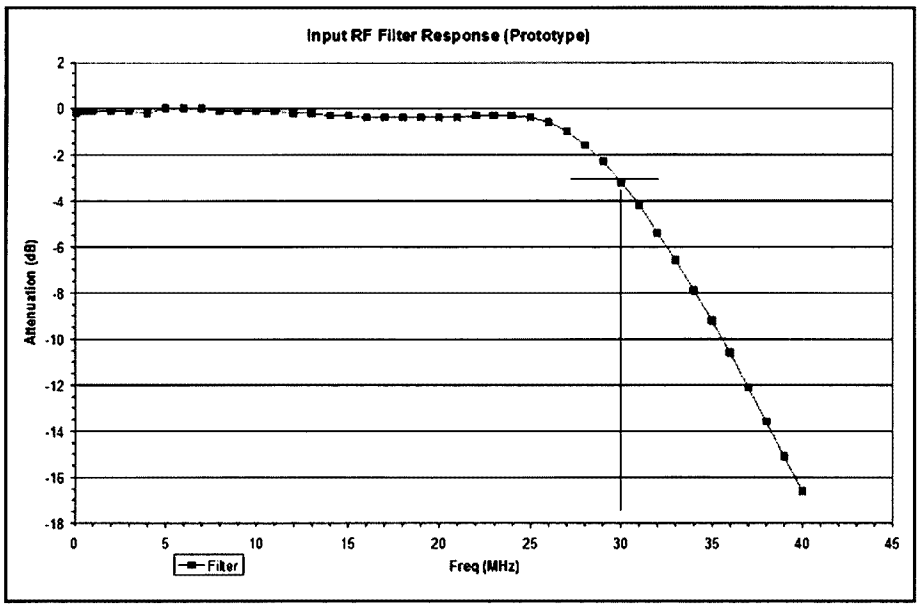


Figure 5: RF input LPF response (prototype).

frequency response – and I can report this is definitely worth trying – and easily achieved if the mixer is built into its own small diecast box with SMA connectors to allow ease of swapping these ports.

4.1 Calibration

The up-converter can be used directly with no level calibration, by setting R24 and R27 to mid position. The absolute level uncertainty however would potentially be +/- 2 dB without calibration, depending on components used. Calibration is recommended and requires access to a signal generator with known output power levels, and power meter (or other device such as a HP-8922S itself, a VK5EME power meter, or a vector voltmeter with 50 ohm termination).

Disconnect the LO Buffer amplifier output from the Mixer LO input. Terminate the LO buffer amplifier at C18 with a 50 ohm load input impedance measurement device such as the HP-8922S itself (with its internal attenuation setting to 10 dB or more). Adjust R16 (a 10 k ohm, multi-turn trim-pot) of the VCXO to obtain 60.000 MHz. Next, adjust the value of R27 to obtain a mixer LO drive of 7 dBm. The LO drive harmonics should be smaller than -30 dBc. Re-connect the LO buffer amplifier output to the mixer LO input.

The input LPF filter should be checked for flatness and that its pass band attenuation is not greater than 0.3 dB at 24 MHz. If the attenuation is greater than 0.3 dB then check the component values and materials used and re-test. The prototype LPF pass band response is shown in Figure 5 and was plotted with a VK5EME Power Head which outputs a DC level that is proportional to the input RF level.

Next, the completed up-converter is adjusted for a 'Zero dB' conversion loss and with the LNA switched out (not used). Connecting all the blocks together now, apply a known, low level -30 dBm RF signal at several spot frequencies (for example, 0.5, 4, 8, 12, 16, 20 MHz) to the input of the up-converter and adjust R22 to obtain the best 'average' unity power gain setting at the up-converter output (but translated in 60 MHz frequency offset). The amplitude level variation should typically be less than +/- 0.5 dB. Do not forget to calibrate your test cables and to subtract their losses when doing these calibrations.

If you are planning to use this converter with a HP-8922S or similar unit, then use the spectrum analyser to measure and plot the output responses.

Finally check that there is a nominal 18 to 20 dB increase in displayed level on the spectrum analyser when the LNA is switched into circuit.

5. Summary

If you are fortunate in obtaining a relatively cheap GSM type Test Set from eBay or other sources, do not be disheartened if you find the spectrum analyser only covers 10 to 1,000 MHz as does the HP-8922S. This easily constructed up-converter will be a most worthy addition, enabling the GSM spectrum analyser to be used on the lower HF frequencies.

The 'as-built' VK4YNQ up-converter design easily met all the performance requirements and has become a useful and accurate test equipment accessory for the HP-8922S, or indeed any microwave spectrum analyser.

The overall cost of the project will depend on the state of your junk box and what additional components you may need to purchase – see suggested sources at the end of this article.

My sincere thanks go to Mike VK4YNQ for his effort not only in the original design, but also for help and technical discussions during the building phase of this project and, of course, for his assistance in the writing of this construction article.

Sources and References

RFPlus: Mixers, Vectron oscillator and MMICs. Email: joniwright@gmail.com

Web site: http://rfplus.jonwright.org/

MiniKits: powdered iron cores, RF relays (kit), MMICs, SMA sockets, and so on.

Web site: http://www.minikits.com.au

Jaycar: 1% metal film resistors, ceramic capacitors, regulator ICs, diecast aluminium boxes.

Web site: http://www.jaycar.com.au

Altronics: for other components. Web site: http://www.altronics.com.au

Rockby Electronics: for other components. Web site: http://www.rockby.com.au

RS Components: Diecast boxes (52 x 38 x 27 mm (LWH)) stock no. 343-9502 – ideal for small circuits such as the Mixer and LO). Web site: http://www.rsaustralia.com

References

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ARRL Handbook.

'Paddy Board Circuit Construction', Drew Diamond, VK3XU, *Radio Projects for the Amateur 1995* pp 114-117.

Authors

Mike O'Ryan VK4YNQ, who designed the converter, and wrote the technical specification and majority of this article - may be contacted via email mikeo24j@bigpond.net.au for clarifications.

Peter Whellum VK5ZPG provided all the construction and modification effort in building the up-converter, and may be contacted for helpful suggestions concerning these aspects – email pwhellum@bigpond.com or telephone (08) 8648 6504.

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New arrangements for the management of amateur callsigns

Michael Owen VK3KI

From 2nd March 2009 the WIA will assume responsibility for making recommendations to the ACMA for a callsign leading to the issue of all future amateur station licences or a variation to existing licences (upgrades etc). In effect this means that from 2nd March 2009, an application to the ACMA for an amateur licence or a variation of an existing licence will need to be accompanied by a recommendation letter from the WIA.

To better manage amateur call signs, the WIA will publish on its website using selective searches, a listing of all available callsigns, including repeaters and beacons. This information will be updated on a daily basis.

Under the Business Rules agreed between the WIA and the ACMA, there will be five classes or levels of recommendation that the WIA will issue.

These are:

- Level 1 – a three or four letter call sign in any state or territory where the WIA will select the next available call sign ("I don't want to choose a call sign"); the application fee is $5 including GST;
- Level 2 – a three, four and two letter call sign in any state or territory except New South Wales, Queensland and Victoria, where the individual can select two preferences for a particular call sign shown as an available call sign from the website daily list; the application fee is $20.60 including GST;
- Level 3 - a two letter call sign in the state of New South Wales, Queensland or Victoria. Due to the future demand for two letter call signs in these states, additional administrative arrangements are necessary to ensure to the extent possible a fair and equitable arrangement has been put in place. Applications for two letter callsigns in these states will only be accepted by mail; the application fee is $48.85 including GST;
- Level 4 – a special event callsign in any state or territory. Applications for a Special Call Sign should only be made where the construction of the call sign is outside the conditions detailed in Section 8 of the Radiocommunications Licence Conditions (Amateur Service) Determination No.1 of 1997 or the section on call signs in the ACMA information paper titled Amateur Licence Information Paper. ACMA requires that applications for special call signs must be made three months prior to its use. In seeking a recommendation from the WIA, full details of the event and the reasons for the request should accompany the application; contact the WIA national office for application fee details; and
- Level 5 – an amateur repeater or beacon call sign in any state or territory. A WIA callsign recommendation will need to accompany a licence application and the frequency coordination letter from the WIA; the application fee is $20.60 including GST.

All recommendations are valid from the date of issue for a period of 28 days. However, extensions may be granted upon request to the national WIA office.

The WIA is very conscious that an amateur may lose a valued call sign for all sorts of reasons, sometimes an error completely beyond his or her control. The WIA also recognizes that if this happens, it is highly likely that someone will notice the call sign appear on the WIA website, and let the previous holder know. Accordingly, before any recommendation is finalised, the WIA will allow five (5) working days from the time a call sign first appears for an error or omission to be corrected. If the previous holder does not act in that time, then the call sign will be recommended, if someone asks for it.

Further information and application forms for each class or level of recommendation can be obtained from the WIA website.

The WIA is continuing to offer successful amateur examination candidates the opportunity to lodge their application for an apparatus licence through the Exam Service, if the WIA Assessor is agreeable. They will need to complete a particular part of the Assessment Sheet, add the appropriate amount (for a Level 1 or a Level 2 application) to the amount given to the Assessor, complete the ACMA Application for an apparatus form and also a WIA Callsign Application form. This is a special form for Levels 1 and 2 applications, and is designed to be linked to the details already provided by the candidate for the assessment. The WIA will forward the Application for an apparatus licence, payment, and the Callsign Recommendation to ACMA on behalf of the candidate.

WIA Assessors will have the WIA Callsign Application forms which will also be downloadable from the WIA website.

As with the management of examinations and the issue of certificates of proficiency, the WIA is obliged to charge fees on a cost recovery basis. That charge must be approved by ACMA as being reasonably related to the costs incurred or to be incurred by the WIA in relation to the matters to which the charge relates. In short, the WIA must charge a fee for a service that recovers what it costs the WIA to provide the service. It cannot charge less than such a fee.

Of course, and unlike the examination management function, the WIA has no experience of providing this service, and so after the first year the contract between the WIA and ACMA governing the management of examinations, the issue of certificates of proficiency and this call sign service, requires a complete review of the costs after the first year, and thereafter the provision of annual audited financial information to ACMA.

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Matching network software

Ron Sanders VK2WB

There are lots of software programs available on the internet which make the design of RF matching networks easier, and also help to understand the process. I have selected some which I have found useful and instructive. Some even help reveal the mysteries of the dreaded Smith Chart.

Ideally you should know the source and load impedances for the network. A common application involves matching a 50 ohm source to a complex load such as an antenna system. SuperSmith (Reference 3) provides the tools to get a perfect match once you know the network component values and the source and load impedances. In cases where significant RF power is present, the components must be sized correctly to safely handle the voltages and/or currents. The voltages/currents for each component can be calculated by the LTSpice program (Reference 4). Iron-powder toroid cores are often used as inductors in these networks, but care must be taken to keep the voltage across the winding within safe limits. The safe working voltage for an iron-powder toroid inductor is calculated in Minirk (Reference 5).

What if you do not know the load impedance? See the suggestions under RevLoad (Reference 3) below.

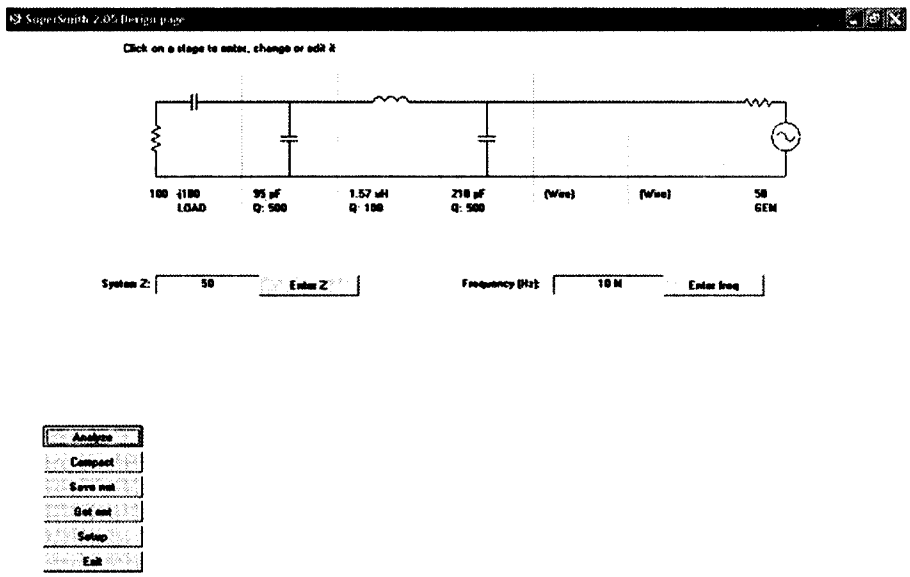


Figure 1 SuperSmith Design

The programs

The example shown in the different programs is for a Pi-network which will match a 50 ohm source to a complex load impedance (r +/- jx) of (100 –j100) ohms at 10 MHz. The j operator shows that the value is a reactance. Positive j values are inductive and negative values are capacitive. The example therefore has a load consisting of a 100 ohm resistance (r) in series with a capacitive reactance (-jx) of 100 ohms – equivalent to approx 159 pF at 10 MHz.

SuperSmith program (Reference 3)

The "Design" page allows you to insert components in any of the 5 network stages as well as the complex load impedance. Figure 1 shows the design page with the network values inserted. The Q value of each component can be set to reasonable values. I usually use Q=100 for inductors and Q=500 for capacitors. Enter the values shown in Figure 1 and then hit the Analyze button.

Figure 2 shows the "Analyze" page which is dominated by the Smith chart. This is a simplified version of a Smith Chart, where only the most important lines are shown. As usual the chart is normalized to 50 ohms which means that the complex impedances are plotted as (r +/–jx)/50. The normalized resistance (r) is plotted along the horizontal axis starting on the left end with 0 and finishing on the right end at infinity. The actual calibration points >5 are not shown on this simplified version as the scale becomes too crowded. The curved lines show the major normalized reactance (jx) values. The top half shows positive values which indicate inductive reactance (XL), and the bottom half shows negative values which indicate capacitive reactance (XC).

The point marked Load is the normalized value of (100-j100) which is at the intersection of (2-j2), and is the starting point for building our network. The network should transform this impedance to (50+j0) which is the impedance required by the generator. This is normalized to (1+j0), which is at the centre of the chart. The network shown is correctly matched, with Gen at the centre. Left-clicking any point on the chart, will display all the data for that point, along the top of the page.

The buttons at the lower left provide more useful information concerning the network.

"Q setup" shows arcs beginning and ending at each end of the centre line, one in the top hemisphere and one in the bottom. These lines can be adjusted for any desired Q value, but values not exceeding three are most common, unless the filter characteristics of the network are important. If you set the Q value at 0.65 you will see that the top Q curve just encloses the C1 segment. This shows that the input of the network has a Q of 0.65. Adjust Q values to just enclose the C2 segment and you will see that the output Q of the network is 2.2.

"VSWR setup" shows a circle centered on (1+j0). This centre is actually a VSWR of one, indicating a perfect match. The circle encloses the limit of the suggested VSWR around the source point (Gen). A VSWR of two shows a circle with diameter from 0.5 to 2 along the resistance centre line of the Smith Chart. This equates to r = 25 to100 ohms, which is a VSWR of 2:1 for a 50 ohm system.

"Sweep setup" allows the frequency to be swept between two limits to show the changes to the feed point (Gen) matching. This can be used in conjunction with the VSWR circle to show acceptable limits. Selection of "Sweep setup" activates the "Tabulate" button, which brings up a table showing all measurements at each of the sweep frequencies. This table can be printed or put into a file suitable for including in a spreadsheet or other program.

Experiments with SuperSmith

To get a feel for adjusting the network values try the following changes.

On the Analyze page change the value of C2 to 135 pF. The C2 curve now extends to the circle passing through r = 0.5, which is approximately at point (0.5-j1.3), and the L curve also increases in length from there to approx. (0.5+j0.7). CI curve now goes from (0.5+j0.7) to (1.3+0.5). Turn on "VSWR setup" and set it to 1.6 and you will see that the network input (Gen) sits on the VSWR circle. This shows that the network now has a normalized input impedance of (1.3+j0.5) rather than (1+j0). The actual impedance is therefore 50*(1.3+j0.5) which is (65+j25), which means a series combination of 65 ohms and 25 ohms inductive reactance.

You can see that if the L curve is shortened it may be possible to make the C2 curve get back near the centre of the chart. Change the value of L to 1.4 uH and notice that the L curve now finishes at approx. (0.2+j0.45) and C2 curve finishes at (0.8+j0.25). Now set the VSWR to 1.4 and you see that the source (Gen) lies on the circle. We have improved the VSWR from 1.6 to 1.4, but we should be able to do better.

Once again we can see intuitively that by extending the C2 curve we will be able to improve the matching. Change the C1 value to 320pF. Now the source is much closer to (1+j0) – the perfect match. We can do better yet!

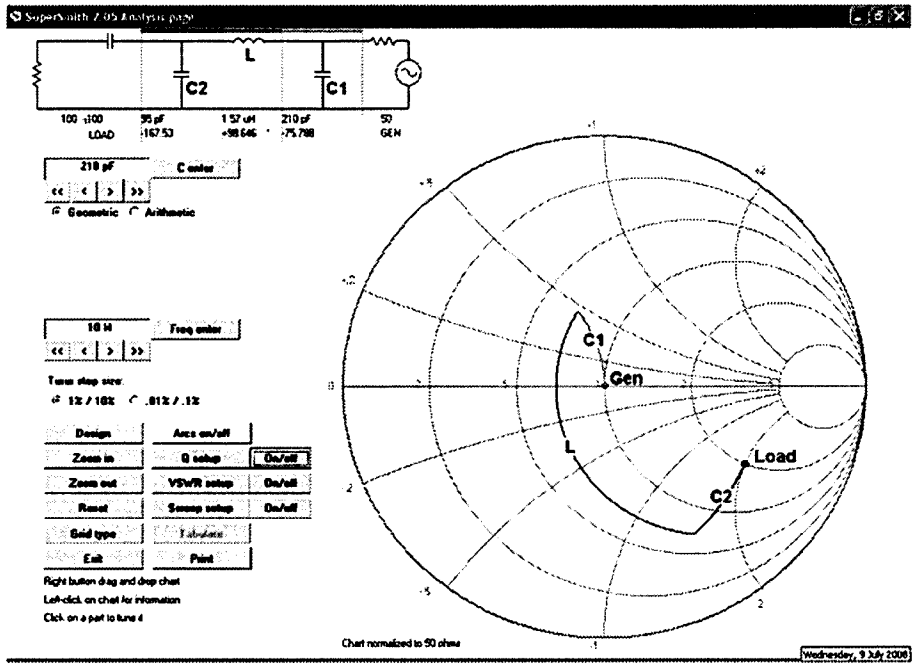


Figure 2 SuperSmith Analyze

Carefully adjust the L and CI values until the source sits on (1+j0). The final values turn out as L = 1.435 uH and C1 = 317 pF. Now check the Q values for input and output of the network. The output Q = 2.7 and the input Q = 1, which were originally 2.2 and 0.65 respectively.

LTspice Program (Reference 4)

Selection of components for a matching network is important when high RF power is involved. Voltages and currents can be quite high under certain conditions and you should determine these for each component where there is RF power, particularly if high impedances are involved. Linear Technology is a manufacturer of power supply modules and has a simulation program called SwitcherCAD III which combines a schematic design program with a Spice analysis program. This combination ideally suits design and analysis of passive networks used in amateur radio. We can specify the power input, frequency, component values, source and load impedances, and get all the voltages and currents in the network.

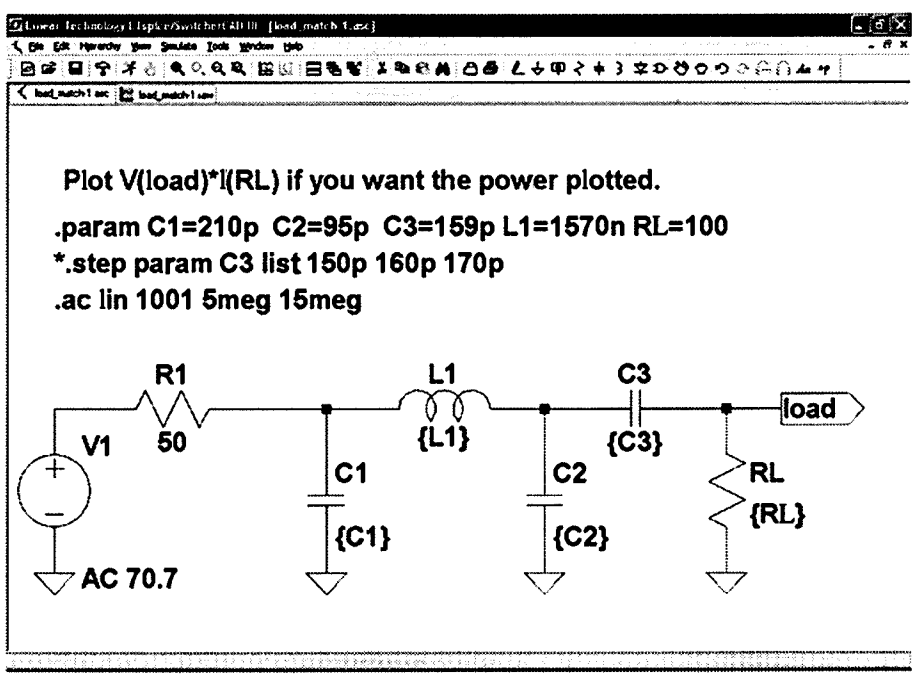


Figure 3 LTSpice Schematic

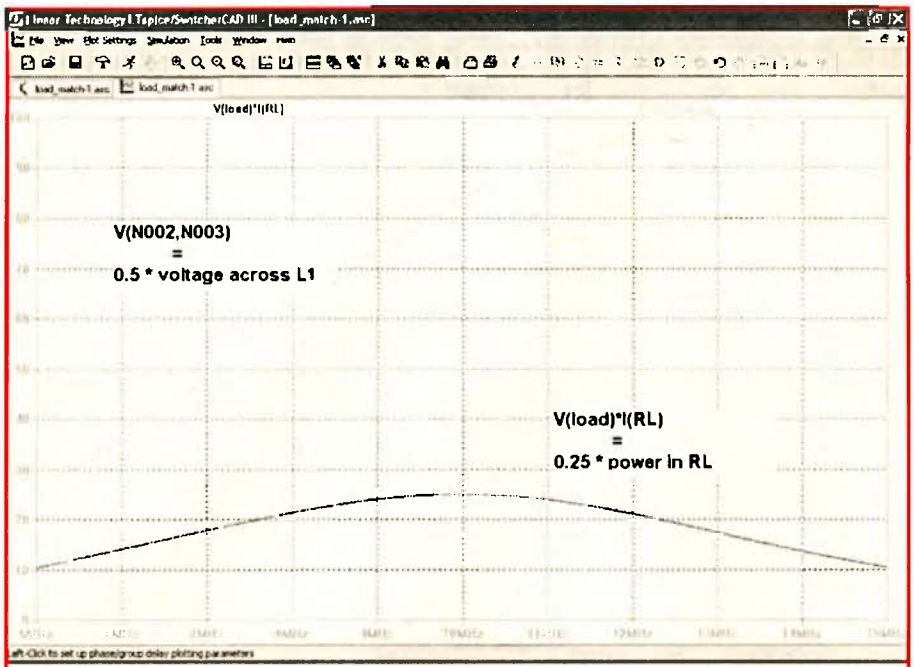
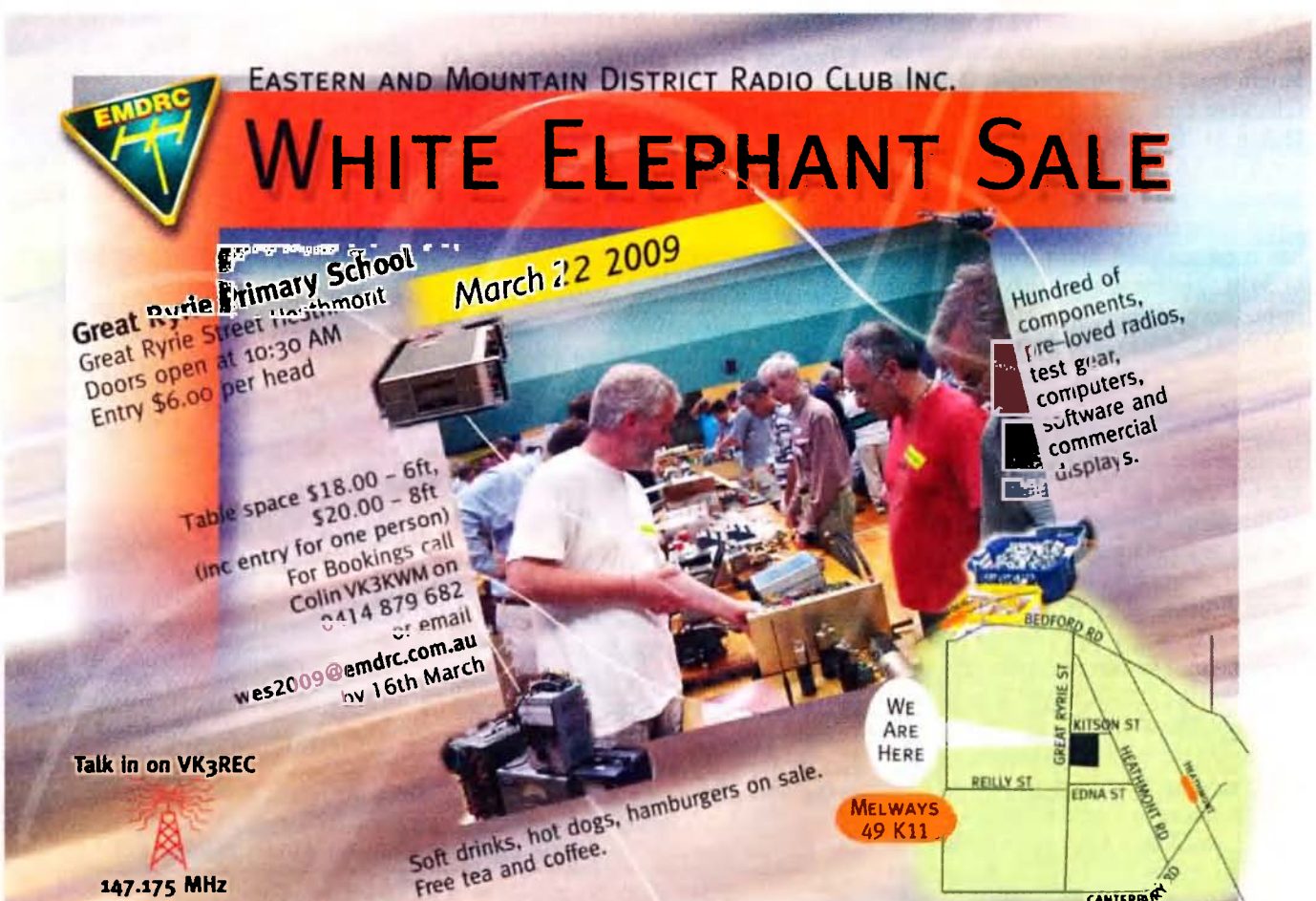


Figure 4 LTSpice Plot

Once installed, the program requires a schematic designed according to the rules in LTspice. You will start by selecting "New Schematic" which brings up a blank design page labelled "Draft1. asc". The "Edit" menu provides all the schematic symbols necessary for your design. Once the design has been made you require LTspice "directives" to tell the simulation program what to do.

Figure 3 shows the LTspice Schematic page for the sample pi-network discussed above. The generator is shown as a voltage source V1 of 70.7 V AC and a series resistance R1 of 50 ohms. This simulates a normal amateur 100 W HF transceiver which is designed to match a 50 ohm load. P = E2/R = (70.7)2 / 50 = 100 W. The Pi-network consists of C1, L1 and C2. The Load (100-j100) is made up of C3 and RL – remember that at 10 MHz 159 pF = 100 ohms of capacitive reactance. Our aim is to get the maximum power into RL, which is the resistive part of our load. You will notice that the only component values listed on the schematic are for the source as these will remain fixed values for our tests.

The text lines shown above the schematic are the LTspice instructions which are necessary for the simulation program. These instructions are in the "Edit" menu. The lines beginning with a "dot" are LTspice "directives" and tell the simulator what to do. Other lines are blue and are LTspice "comments" which are helpful to the user, but play no part in the simulation. You will



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Orion II

First independent test data on ORION II, released 16 April 2006: "Noted receiver guru Rob Sherwood NC0B of Sherwood Engineering now ranks the ORION II as #1 of all HF amateur radio transceivers ever tested for close-in dynamic range, dating back to the 1970's. The original ORION is now listed as #2 overall to the ORION II ".

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notice that one line has an (asterisk) in front of a directive. This deactivates the "directive" which follows on that line. The first directive starts with ".param" and assigns values to C1, C2, C3, L1 and RL. The second active directive starts with ".ac" and denotes that we will do an "ac analysis" which requires a linear plot with 1001 points swept over a range of 5-15 MHz. The deactivated directive starts with ".step" and would plot curves for three different values of C3 which is the load reactance (-j100) if the asterisk was removed. Right-clicking the cursor over any text on the schematic page allows you to change the text. The curly brackets around any component value tells the simulation program that a "directive" will assign a value to that component – for example L1 is assigned 1570 nH by the ".param" directive.

Figure 4 shows the LTspice Simulation page resulting from the schematic. This page can be launched from the schematic page by right-clicking a blank area and selecting "Run" from the menu. This menu also allows you to choose which "Visible Traces" are plotted. By hovering over a component the cursor changes to a "clamp ammeter" and a left-click will measure the current through that component. Similarly, if you hover over a node the cursor will change to a "probe" and record the voltage. If you hold the left-click button on node 2, and drag the cursor to node 3, then release the button the simulator will record the voltage difference between nodes 2 and 3. I have added text alongside the curves to explain what they show, but normally you would only see the two values shown above the chart, that is, V(load)*I(RL) and V(N002,N003). V(load)*I(RL) is the voltage across RL multiplied by the current through RL, that is, the power dissipated in RL. V(N002,N003) is the voltage difference between schematic node 2 and node 3, that is, voltage across L1. Node 0 (N000) is always the common reference point as shown by the down-pointing arrows.

The Y-axis shows a scale from 0 – 100 and the X-axis is scaled from 5 – 15 MHz. These scales can be changed by left-clicking on the axis. The added text shows that the values plotted are not the values actually produced in the "real-world" case, but the shape of the plots is true. The reason for the lower values shown are due to the 50 ohm

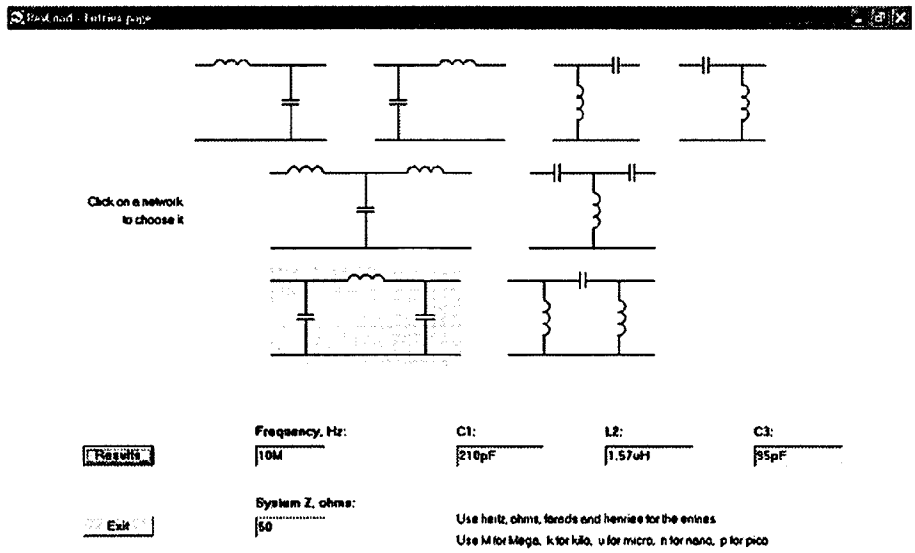


Figure 5 RevLoad Entries

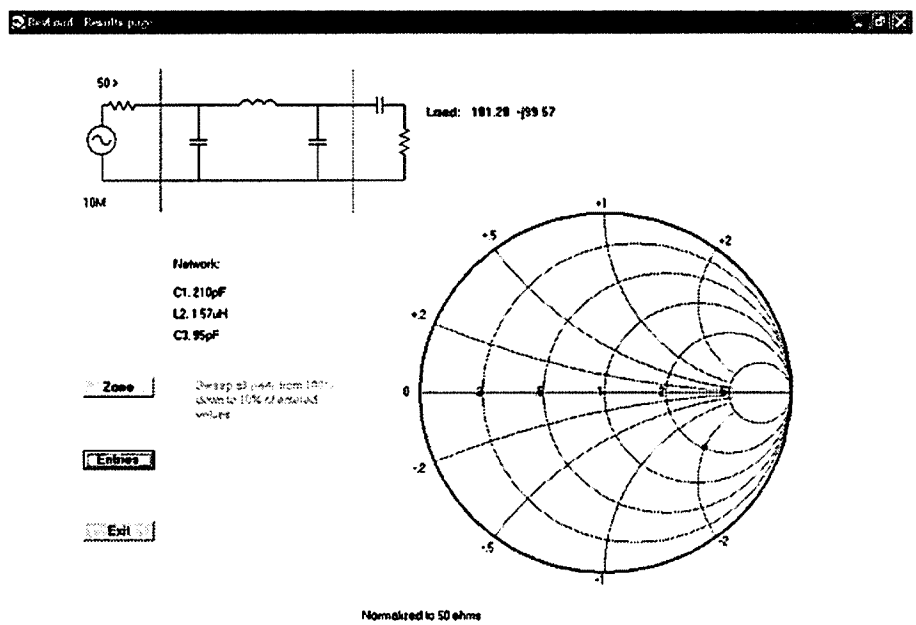


Figure 6 RevLoad Results

resistor (R1) included in the schematic. When the network matches the load to 50 ohms (50+j0) the voltage at node 2 is actually half the voltage at node 1 (V1), because the matched network + load looks like a 50 ohm resistor. Because power is proportional to E and I, the plotted power is reduced to 0.25 of the "real-world" value.

You can see that the power curve peaks at 25, which corresponds to 100 W in the "real-world" case. This shows that the maximum transfer of power occurs at 10 MHz, as designed. At 10 MHz, the voltage across L1 is plotted as 84 V which equates to a "real-world" value of 168 V. If the inductor is wound on a powdered-iron toroid, the voltage is related to both saturation and heat dissipation in the core, and will depend upon the core size and material. This can be checked by the program "minirk.exe" (Reference 6) for safe operating values.

RevLoad Program (Reference 3)

If you do not know the load impedance connected to your network, but can

measure the component values of a correctly adjusted matching network, this program will produce the complex impedance of the load. An antenna analyser (Reference 1) can check for correct matching and also measure component values, and since it operates at very low levels, any sized components can be used in an "ugly/paddyboard style" network for initial tests. Where an existing antenna tuning unit (ATU) has been adjusted for best SWR without knowing the actual load impedance – as usually happens with an ATU – you can use an LC Meter (Reference 2) to measure the component values at that point.

Figure 5 shows the "Entries" page where you can select the type of network and enter the values and frequency. This page shows the values for our Pi-network at 10 MHz.

Figure 6 shows the "Results" page, which includes a schematic and simple Smith Chart. The Load is shown to be (101.3 – j99.6) which is close enough to our (100 – j100) and is plotted on the Smith Chart at normalized (2-j2). At 10 MHz (–j100) converts to approximately 159 pF.

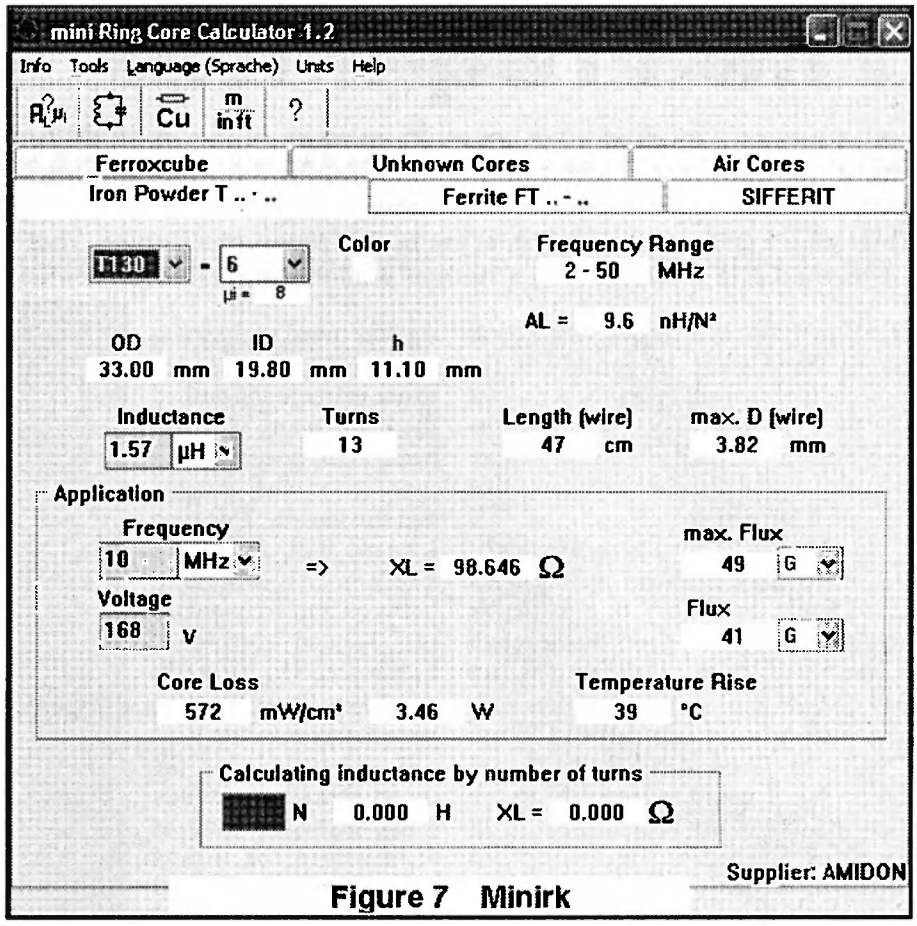


Figure 7 Minirk

Minirk Program (Reference 5)

See Figure 7. This program calculates the operating conditions for an inductor wound on a Micrometals iron powder toroid core. If the specified conditions are within safe limits of core flux density and/or temperature, the program displays the results in black, otherwise results are in red. The picture shown uses our example of a 100 W transmitter with a pi-matching network which has a 1.57 uH inductor wound on a Micrometals T-130-6 core, operating at 10 MHz and with 170 V across the inductor. You can see that it takes 13 turns to get the required inductance on this particular core. The flux is 41 G (4.1 mT) and the temperature rise is 39 C due to core loss of 3.46 W. This inductor is operating within safe limits, but care should be taken to make sure that the heat can get away – think how hot a 5 W resistor gets when it is dissipating 5 W. The temperature rise is calculated for a 100% duty cycle, whereas the normal amateur duty cycle is 50% maximum. The reduced duty cycle would allow the core temperature to show a rise of 70-80 C and still be within safe limits. The flux should never exceed the value shown under "max. Flux", as the core could be driven into saturation.

To see the effect of choosing the wrong core, try selecting a T-130-2 with the same operating conditions. The inductor now requires 12 turns, the flux has increased to 43, the temperature rise is 93° C, and the core loss is 9.69 W. This core is obviously not suitable due to the temperature rise. Try other sizes/materials and see the changes.

Now try selecting a T-130-0 core. You will see that the core loss and temperature results are disabled and that the turns required are now 32. This is because the "0" material is a low loss phenolic (ui = 1, same as air), and is not ferromagnetic. The toroid shape has advantages over a normal airwound inductor since the external magnetic field is reduced, which results in less coupling with adjacent components.

Conclusions

All the programs mentioned here are free for amateur use. Using these programs provides an understanding of how combining C and L components interact with input and output impedances. The simplified Smith Charts shown in the programs may even be a revelation.

Special mention must be made for the programs supplied by Jim Tonne, only two of which I have covered here. See his website for other useful programs (Reference 3).

Linear Technology have several simulation and analysis programs listed on their website (Reference 4).

Another network calculator covering 16 possible network configurations is also very interesting (Reference 6).

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1. VK5JST Antenna Analyser, www.scarc.org.au
2. "Digital LC Meter", *Silicon Chip*, May 2008
3. Jim Tonne, http://tonnesoftware.com/
4. Linear Technology, http://www.linear.com/designtools/software/
5. Wilfried Burmeister, http://dl5swb.de/
6. John Wetherel, www.rfengineer.net/match1.htm
7. vk2wb, ron.kiama@gmail.com

The Freq-Mite:

a you-beaut enhancement for your QRP rig

Grant McDuling VK4JAZ

Operating a QRP station can be, at the best of times, challenging. That is half the appeal as far as I am concerned. It is when working a 'normal' station that it often gets difficult.

'QSY to 7006' is a request that is just about impossible to comply with, especially if you are operating a rig that you built yourself. I say this because the vast majority of QRP kits do not feature accurate digital frequency readouts like so-called big rigs do.

So what can be done to rectify this?

Until recently, there was nothing much that I could do to QSY to a particular frequency other than guessing the rough where-abouts on my analogue dial. But as I became used to operating thus with my Small Wonder Labs SW40 CW rig, I began to dream of enhancing my set up so that I could indeed add to the functionality of my operating set up in my shack. So I began to research options regarding frequency counters and how I could build one as an enhancement to my rig.

A quick look at the Small Wonder Labs web site (http://www.smallwonderlabs.com/) revealed a kit that looked just the thing I needed. Called the Freq-Mite, this little kit was billed as a Morse readout frequency annunciating device that is user programmable and readily adaptable to the IFs in most QRP rigs. It can count the frequency up to around 32 MHz with an accuracy of around two kHz. The output of this device is at either 13 words per minute or 26 words per minute.

The device is built around a pre-programmed I6C622A IC, a 6-pin resistor network and a dual row jumper strip upon which you attach a number of jumpers according to the actual IF of your rig. The instructions guide you through what you will need to do, and is very easy to follow. I had no difficulty at all sorting this out.

I followed the instructions to the letter and hooked the kit up to my rig as suggested. When I applied the power and pushed the normally-open pushbutton switch that I mounted on the front panel of my rig, I was amazed to hear, in three digit Morse code, the frequency that the rig was tuned to. I swung the tuning knob of the rig to one extreme and pushed the knob again. 003 was heard in my headphones. I tuned to the other extreme and tried again. This time I heard 040. So now I knew my rig operated between the frequencies of 7.003 and 7.040 MHz. Fantastic! On air tests proved the Freq-Mite to be remarkably accurate.

Now I am able to QSY to whatever frequency I am asked, as long as it is within the tuning capability of my little 3 W rig. This really is QRP heaven. All of this for just $22. It really does not get much better.

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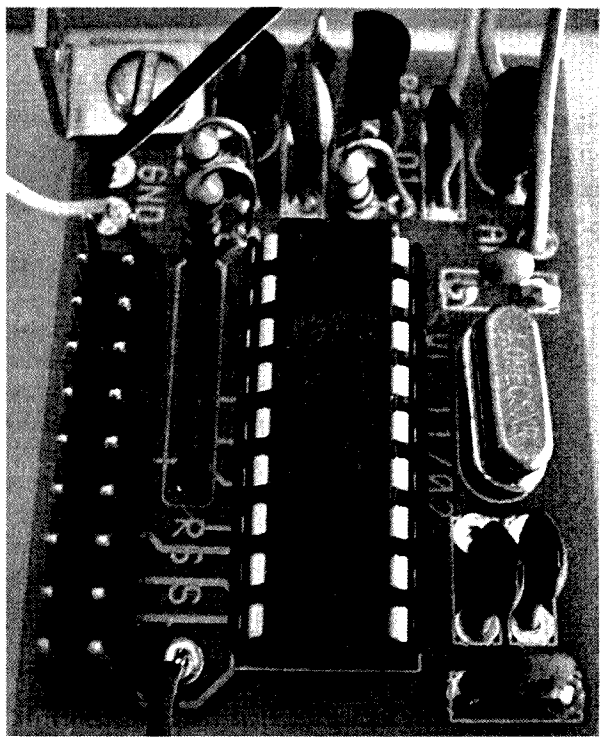


Photo 1: A close up view of the Freq-Mite itself.

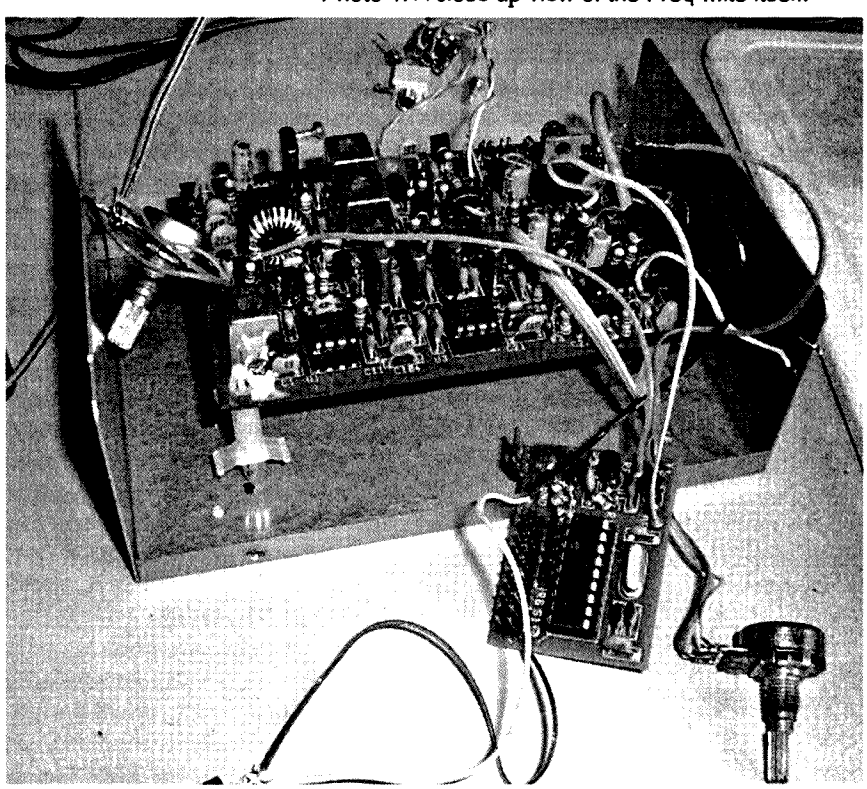


Photo 2:The Freq-Mite connected to the Small Wonder Labs SW40 CW rig.

Handheld with the lot: the IC-92AD

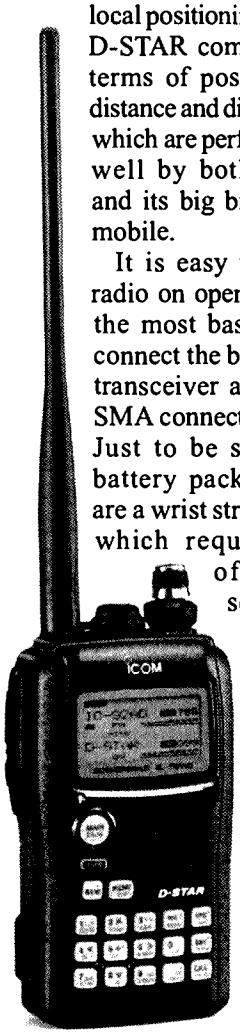
Peter Freeman VK3KAI

Waterproof, 2 m & 70 cm, D-STAR, in a dual band 5 W handheld transceiver – what more do you need? GPS? World Wide Coverage? Donel

The IC-92AD is a dual band (2 m and 70 cm) five watt D-Star handheld transceiver that features D-Star and full traditional analog voice capability, but a swag of features.

The receiver gives wideband reception options as well, as can be seen from Table 1. Standard transmit operations are FM and Digital Voice (DV) modes, with DV only available on band B.

With the addition of an optional HM-175 GPS microphone, you have comprehensive GPS operation, which beacons positioning data via the international D-STAR and APRS networks. It also displays and transmits local positioning data with other D-STAR compliant radios, in terms of position, elevation, distance and direction: functions which are performed extremely well by both the IC-92AD and its big brother IC-2820H mobile.



It is easy to assemble the radio on opening the box – in the most basic form, simply connect the battery pack to the transceiver and screw on the SMA connector whip antenna. Just to be sure, charge the battery pack. Also supplied are a wrist strap and a belt clip, which requires the fitting of two supplied screws.

The BC-177 provides capability of rapid charge of the BP-256, typically about 2.5 hours. This charger is an optional extra. The transceiver is supplied with a standard "wall wart" style charger.

The BP-256 battery pack is a 7.4 V 1620 mAh Li-Ion pack, giving 5.5 to 6 hours of operation time when on high power (5 W). If you switch to Low power (0.5 W), battery life is quoted as 14.5 hours. Mid power (2.5W) will typically give you around 8 hours of operation – plenty of time for an average day out. Using the standard charger, charging time is approximately 6 hours. This will be achieved only if the radio is off during charge – leaving the radio on will result in an incomplete charge or require a longer charging time. Another available option is the BP-257 battery pack, which will hold six AA alkaline cells. Whilst this pack may be an attractive option, its use drops power output to typically 0.1 W.

In addition to use with a battery pack, the IC-92AD can be used with other supply lead options, up to a standard 12 V supply: specified supply limits are 10.0 to 16.0 V.

The transceiver has a large clear display showing many status icons – all together, there are 18 items which can be displayed, depending upon mode of operation. It can be multi - configured as either a single band or a dual watch display – displaying the frequency or memory name in actual use when in single band mode, or the frequencies or memory names of both bands when in dual band mode.

Photo 1 provides a view of the IC-92AD with HM-175GPS attached, with the display in "dual watch" mode. If you select memory name mode then you can display the repeater callsign, locations or simplex names etc via alphanumeric tagging capability.

Below the display, there are a number of control buttons: at the bottom portion of the unit is a five wide by three deep keypad array. Between this keypad and the display are four buttons – a larger "Main/dual" button, the power switch, and two buttons for Band and Menu.

Having assembled the transceiver and ensuring that the batteries are charged, it is relatively easy to set up a local simplex or repeater frequency if you have used earlier Icom handheld radios. This is because of the consistent style of control ergonomics used by Icom. A newcomer may find the system a little confusing, but it is easy to learn the basics. Colour coding of the multiuse buttons assists in the learning process.

Many of the main keypad buttons have three or even four functions each, with each function colour-coded. The function of the key will depend upon the current context and the length of duration of depression of the keypad – a momentary press gives the black operation (for example, entering a numeral), whilst a press of longer than one second will give the purple colour-coded function. It does not take long to get the hang of this menu system intuitively but a radio with this level of functionality, needs the operator to read the manual...at least once.

To assist you, this operation is clearly outlined on pages 4 and 5 of the operating manual, which has 156 pages in total. A further option for the appropriate buttons is the sending of a corresponding DTMF tone, which occurs if the button is depressed whilst the PTT is activated.

The keypad summary chart, as well as pages 2 and 3 indicating the names of each of the controls, has links to the page of the manual which gives the detailed description of the function in question.

This is relatively straight forward for normal FM operation.

On the other hand, it is best to read the manual if you intend using the radio on the D-STAR system, simplex or via one of the repeaters. The standard mode of Digital Voice (DV) can only be activated on the B VFO (or band). Like all Icom D-STAR transceivers, you will need to set up a number of parameters such as your callsign (mycall) and a few other details of any repeaters that you wish to access. The D-STAR Australia web site (http://www.dstar.org.au) has lots of

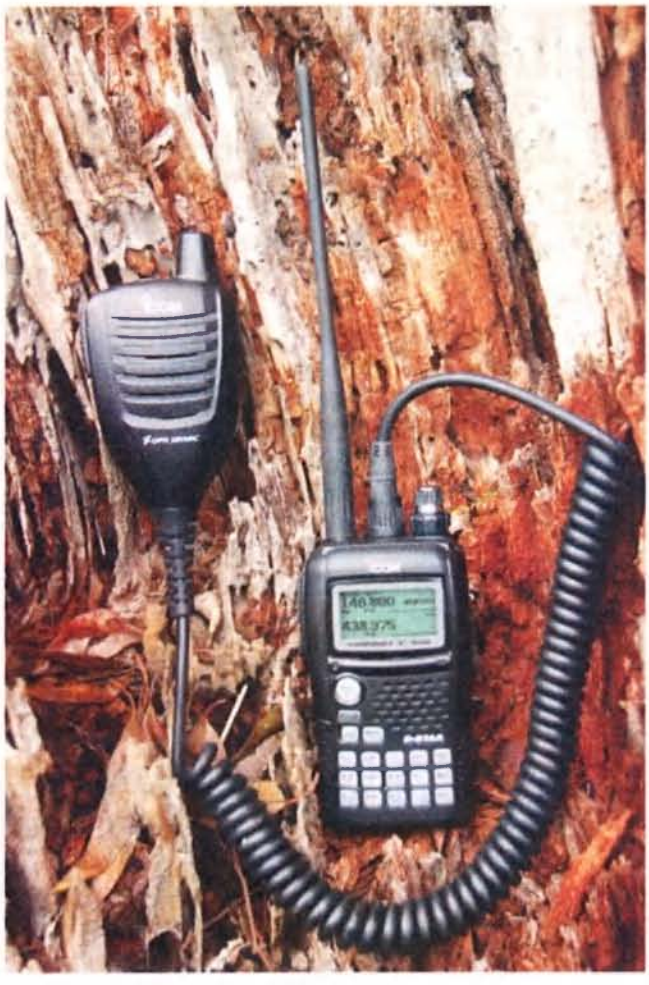


Photo 1: The IC-92AD and optional HM-175GPS, with the display in "dual watch" mode.

helpful information for the newcomer. It also has files you can download and program into the IC-92AD, or any other D-STAR radio. These are setup for each Australian state, thanks to Dave Tilson VK3UR. Do not forget to register on this website so you can be enabled for gateway operation to explore the full capabilities of the international D-STAR network.

The international network now has 350 plus repeaters around the world and is growing at a fast rate. Once registered, you can call anyone with D-STAR equipment around the world, just like calling on your local repeater, but also send SMS data and position data, all simultaneously with the IC-92AD.

One area of interest to explore was GPS operation.

A few minutes reading the relevant pages from the manual and following the instruction resulted in the GPS display operating correctly. It took a few minutes for the receiver to initialise, as do all GPS receivers when operated for the first time – they need to acquire the location of the receiver from the GPS satellite constellation. The manual has 11 pages describing the various options available when operating with either the HM-175GPS or an external GPS receiver. I set the unit up for GPS Mode, a simple position display, as can be seen in Photo 2. This photograph was taken whilst on a walk one damp afternoon along a local path. Despite the tree coverage, with all the leaves being wet and acting as RF attenuators, the GPS was reporting position at all times.

In GPS mode The IC-92AD can also show the compass direction of a received D-STAR station, its position and distance away or to a memory stored with a compass-like display pointer.

On further exploration I found that in another mode GPS - A mode, the IC-92AD can beacon your position data, to the nearest D-Star repeater within range. This is known as DPRS, a cousin protocol to APRS. The data will then be processed and sent to the APRS system via the internet and to various web sites for information and map display, like Google® maps, Jfindu and aprs.fi Note: With all WIA D-STAR repeater systems, and many of the club systems, the DPRS position data is interfaced into the APRS system. DPRS stations can be viewed on software map packages like UI-View®.

I had no qualms taking the unit with me for a walk that afternoon, despite the scattered showers. I did not even need to worry about keeping the transceiver out of the rain – the IC-92AD is waterproof to IPX7 standard – Icom claims that it will tolerate immersion in water up to one metre deep for a period of 30 minutes. I have seen the IC-92AD immersed in water at about 40 cm depth for at least three hours at a hamfest. At the end of the day, the staff simply removed the transceiver, shook off the water and the radio worked perfectly. The main unit, the BP-256 and the HM-175GPS all comply with IPX7. What does that really mean – there should be no problems with exposure to rain or dropping the unit into a shallow pool of water. Note that the BP-257 Dry Cell case is not waterproof.

Having had an initial exploration of the transceiver and its basic functions, it was time for deeper examination of the capabilities of this transceiver. This is possible without resort to the manual for many functions, but it is recommended that you spend some time reading.

One obvious place to start is to program some commonly used frequencies into memory. This is one place where you have plenty of choice – there a total of 1304 channels, including 100 program scan edges and 4 call channels, with the memories arranged in 26 banks. This may seem to be a little daunting at first, but Icom also have that aspect covered. The first step is to purchase the optional RS-92 remote control software, which includes the OPC-1799 RS-232C PC connection cable. The next step is to download a configuration file from the Australian D-STAR website, which gives you a standard setup file which includes all the standard repeater and simplex frequencies used in Australia, including CTCSS tones if needed. Both FM and DV operation frequencies and memory naming are configured in this file. All you do is select the corresponding file that matches your local repeater and that is it. You can modify the file once you have opened it in the RS-92 software. Once you have configured the memories in the software package, it is then a simple matter to connect to the IC-92AD via the OPC-1799 cable and to transfer the memory settings to the transceiver. Most functions of the transceiver can be controlled via the RS-92 package. If you are using the DV mode, you can use the package to send and receive short text messages (up to 20 characters) via the PC.

Downloading the file made the radio really easy to use, because of the well structured memory channel plan. Each

D-STAR repeater and each Australian analog repeater has a channel allocation. All you need is a WIA repeater list and to turn on the radio. Repeaters can be selected by frequency, callsign or name.

For example, if you want to talk to a friend in Kent, Southern England, on DV mode, just turn to channel 143, or to call a friend in Munich Germany, just turn to Channel 124, a friend in the Ozark Mountains Missouri, that is Channel 323 and just give them a call.

In next year's WIA call book, Icom and the D-STAR Users Group will supply a full listing of national and international D-STAR repeaters, information and configurations.

The receiver has a simple bandscope function, which will show the received signal strength on the display, with any received audio audible via the speaker whilst the scan is in progress.

When using the DV mode, you can record up to 30 seconds of audio from an incoming call to memory – as a single file or up to three files of 10 second duration. You can record up to ten seconds of audio for use for outgoing calls – for example your callsign and a CQ message. The IC-92AD also has auto messaging system, if a D-STAR station directly calls you via callsign routing, your IC-92AD has the ability to call the calling station back with a voice reply, like an answering machine.

The IC-92AD has several other features that I did not explore. There are 10 DTMF memories, each storing up to 16 digits. This will simplify often used DTMF operations, such as accessing EchoLink or IRLP nodes. There are Power save, auto power off and power on functions, all of which will extend battery life. A time out timer can be set for 1, 3, 5 or 10 minutes, with the timer giving you a beep warning 10 seconds before the timer disables the transmitter. There are many other features which can be useful in many circumstances – one just needs to read the manual to understand how they operate.

Of course, if you happen to make a major error in making settings and are hopelessly lost, you could always resort to initiating a master or partial reset of the transceiver. Hopefully it will not come to that! A partial reset will save your stored memories, whilst resetting all other functions to the factory defaults.

The transceiver was a delight to operate. I received good audio reports at all times. Whilst I did not attempt to transmit on DV mode, the signals received in DV mode provided clear audio. The transmitter can be set to 5, 2.5, 0.5 or 0.1 W. The receiver sensitivity depends on the frequency in use, but is quoted as 0.14 µV near 2 m and 0.16 µV near 70 cm for FM (12 dB SINAD and 3.5 kHz deviation) and 0.22 µV for DV mode on the amateur bands (1% BER). For detailed specifications, request a brochure from your local dealer or see the Icom website at http://www.icom.net.au/



Photo 2: The IC-92AD and optional HM-175GPS displaying the current position using the GPS-A function. No need to worry about dampness or rain drops with this radio, rated waterproof to 1 m depth for up to 30 minutes.

If I were currently in the market for a handheld transceiver, the IC-92AD would be at the top of my list.

At the time of writing, the IC-92AD was available for $695 "whilst current stocks last". I am sure all are aware that the Australian dollar has depreciated considerably in the last few months, so prices are sure to vary. The optional HM-175GPS can be found for around $395 at present, but the same caveat applies. To be safe, check with your local Icom authorised dealer for current pricing.

I thank Kitty at Icom Australia for the loan of the IC-92AD and HM-175GPS.

Photographs by the author

ar

Table 1: Transmit and Receive coverage specifications

Transmit (MHz)	Receive (Working range) (MHz)	Mode
144–148 420–450	A band: 0.495–999.990	FM/WFM/AM
	B band: 118–174, 350–470	FM/FM-N/AM/DV

Hello, my fellow Australian amateurs,

The IC-92AD repeatedly amazes me by the number of features available.

Being with Icom, I haven't purchased many rigs for myself, however I love the IC-92AD and have owned one for about 3 months,

It is a small wonder. Can I suggest that all users please read the manual in earnest, do some experimenting and then read the manual again!

As I did! There are support/user groups around. Don't forget to look at www.dstar.org.au for all your D-STAR info and to register for gateway access. On the site you can also register to be part of D-STAR Lists forum, so any questions can be answered promptly by experienced 92 and D-STAR users. Icom also glances at the list so if we can be of help, or to clarify things, we are there!

73, Peter VK3TQ Icom Australia

News from...

VK2

Tim Mills VK2ZTM
c/- amews@tpg.com.au

The **Central Coast ARC** conducted their annual field day at the Wyong Race Course in early February – the 51st event – on one of our warmer weekends. Attendances were good with bargains everywhere. The club and its team of workers have to be thanked for their time and effort in making it an enjoyable time for the attendees at what is Australia's biggest annual amateur radio event.

Just before Wyong – late January – the **Mid North Coast ARG** conducted their now annual Expo in Coffs Harbour. Also a well attended event, it will be moving next year (January 2010) to a larger venue advises Gary VK2ZKT. The MNCARG have been testing their new 2 metre repeater in a temporary location servicing the Coffs Harbour city area. When relocated to its final location, coverage is expected to extend from Yamba to the north, down the coast to Port Macquarie. It is on channel 6750 with 3 minute timeout and Morse ID at 10 minute intervals. It requires a 123 Hz CTCSS tone. It also supports IRLP node 6625 and Echo Link node 359211. Website: www.mncarg.org

The **Oxley Region ARC** got early access to their new meeting location at the recently constructed SES Headquarters in Central Road, Port Macquarie. It had been expected that February would have been the first access but the building was completed early, so they have been meeting there since early January. They have their formal monthly business meeting on the first Saturday afternoon and the informal gatherings on the second and fourth Friday evenings. Website www.orarc.org

Waverley ARS had a nine day activation of special event callsign VI2BV90 for their 90th anniversary. (The club was founded on the 26th January 1919). 631 contacts were made in the nine days of operation on HF, VHF and UHF, including 17 satellite and two with the ISS. There were 110 DX contacts while band conditions were not at their best. QSL cards are being sent by either the return envelopes supplied or the bureau. Waverley lay claim to being the oldest Australian radio club. Waverley has a project afternoon on the first Saturday and a meeting on the third Wednesday evening of the month. Website vk2bv.org or Simon VK2UA on 02 9328 7141.

Liverpool and District ARC are planning an antenna building workshop to make a 2 metre Flower Pot antenna on the weekend of the 28/29th March at West Hoxton. Contact Gary VK2BR by email vk2tsr@bigpond.com or in the evening phone 02 9896 5763. The Flower Pot is a design by John VK2ZOI from HADARC.

Hornsby and District ARC have Standard and Advanced exams on 7th March. Contact Tony VK2BTL on 02 9487 3383. Website: www.hadarc.org.au They meet on the second and fourth Tuesdays at Mount Colah.

Hunter Radio Group meets on the second Friday evening at NBN TV studios Newcastle. Early last month they resumed the Monday evening VK2AWX news bulletin at 7.30 pm on 3593 kHz and local area repeaters.

Mid South Coast ARC had their first quarterly meeting for 2009 at Milton on the second Saturday in February. The next meeting is in May. Their 2 metre repeater on 6700 has resumed operation from a new location.

Some of the regions of **NSW WICEN** have AGMs coming up. Northern Rivers on April 5th and Central Coast on 11th April. Telephone contact with NSW WICEN 0408 397 217 or the website www.nsw.wicen.org.au

The annual **Urunga Easter Convention** will be held in April at Urunga on the Mid North Coast of VK2 over Saturday and Sunday, the 11th and 12th. Check out their website.

The **Kurrajong Radio Museum** was featured in VK2WI news during the summer sessions which tempted a group from HADARC to visit at the end of January. Other amateurs have also made individual visits. Late last year the ABC TV Collectors program had a camera crew pay the Museum a visit. The segment that was recorded has been scheduled for a showing on Easter (Good) Friday, 10th April. The Museum on the Bells Line of Road, Kurrajong Hills, is open most weekends from 10 am to 5 pm and group visits can also be by appointment at other times. Telephone 02 4573 0601, email vk2zio@yahoo.com.au or the web page – do a Google search on 'Kurrajong Radio Museum'.

This month is the 99th anniversary since the WIA came into existence as the result of a meeting called and held in Sydney NSW to form an "Institute". A group of Experimenters came together at the Hotel Australia, Sydney in March 1910 to discuss the high cost of the annual licence (then One Pound) and the delays in granting "experimental" licences. From that meeting came an "Institute" which is today, the world's oldest national Amateur Radio Society. We are two years ahead of the RSGB (1912) and the ARRL (1914).

This month the NSW Division is calling for nominations for the Council for the 2009/2010 year, which, along with agenda items and notices of motion for the Annual General Meeting, close at noon on 7th March 2009 at the Dural office, 63 Quarry Road, Dural. The AGM will be held on Saturday 18th April 2009. The venue is yet to be confirmed. Members are reminded to make sure they are financial for the meeting, nominating or submiting notices. Renewal notices, up to and including April, have been sent out. You can check by a phone call to the (office) message bank 02 9651 1490 or an email to vk2wi@ozemail.com.au Members will receive the various notices and paperwork for the AGM by either post or email as previously arranged. The postal address is P. O. Box 6044, Dural Delivery Centre, NSW 2158. It should be noted that Amateur Radio New South Wales is only a trading name adopted by the WIA NSW Division and does not formally meet or conduct business under that name.

The 'shed' for the Dural site was under way as these notes were being prepared. There will have been work during February in completing the project up

to formal approval stage when we will be able to move in and start some of the fit out.

Work continues at the VK2WI station to install a refurbished transmitter to the HF AM service. The transmitter being readied was designed for broadcast band duty so it will be placed in service on 160 metres. The former 80 metre AWA J54/800, which developed shorts in the rubber shielded wiring has been removed and has found a new home as a (future) museum exhibit – no, not at Kurrajong – and the existing 160 metre AWA Tx will move up to 80 metres which is more suited to its design range. It had to be modified to get down to 1845 kHz. Our AWA J54/800s were first commissioned in 1951 and saw service in aviation at Coffs Harbour before being decommissioned and finding their way to VK2WI round about 1980.

Sunday 25th of this month will be the next Trash and Treasure and Home Brew gathering at VK2WI. By then, there may be access to the new shed for shelter and a get together. The weekly VK2WI News bulletins will advise. Remember, if you have news for inclusion in the bulletins, email it to arnews@tpg.com.au by Friday afternoon.

That is it for the month.

73, Tim VK2ZTM.

Oxley Region Amateur Radio Club

David Pilley VK2AYD

EMERGENCY COMMUNICATIONS

With all the disasters around the world, it is not unreasonable to suggest that one day we, as radio amateurs and communicators, will be called upon to assist in some unforseen tragedy.

The Oxley Region Amateur Radio Club (ORARC) at Port Macquarie on the mid north coast of New South Wales, has, for many years, used the local State Emergency Services (SES) HQ for their local meetings. Here they had a room to store equipment and even put up antennas and air their club station, VK2BOR.

Unfortunately the building was condemned by local authorities, bu t with a promise to build new premises for the SES. Unfortunately this did not include the ORARC. Disaster? No, to the contrary. A number of members of the ORARC volunteered to join the SES and take over the Communications Department (Some of them are too old to climb a roof, but they certainly know how to use a microphone!). They now have a very modem building in which to meet and at the same time provide a community service. Last October those who had signed up underwent an SES induction examination in preparation for their new voluntary work.

The new building is now complete and SES equipment is being installed. Although operational, the official hand over is not scheduled until March. We hope to have photos of this event to include in AR. In the meantime the new recruits will be undergoing new communications skills to complement the new operations room. No more five minute overs!! It is GRN discipline.

Although a long way down the track, consideration of use of the two local VHF/UHF amateur repeaters in the area will have to be looked at. In a disaster where SES communications could be overloaded and cell phones inoperative, the battery-operated repeaters may be extremely useful. In an emergency they could be used for SSTV or other digital modes to provide on-site information. We are now in the year 2009!

The ORARC meet on the first Saturday of each month. Visitors are most welcome. For more information contact the ORARC Secretary, Jim Neil VK2VIV, on 6581 2481 or visit the ORARC web site.

VK5

Christine Taylor VK5CTY

ADELAIDE HILLS AMATEUR RADIO SOCIETY

December and January were filled with social activities, a luncheon on 7th December and a picnic on 17th January. Both were very well attended (50+) and a good time was had on each occasion.

The first formal meeting for 2009 was the AGM on February 18th. In March we will have a member's Buy and Sell then in April we will have a normal meeting.

If you are in Adelaide at any time, always contact either John VK5EMI or David VK5KC (previously VK5AMK) QTHR the callbook. They will be able to tell you the venue and the speaker for the next meeting.

All the regular meetings are held in the Belair Community Hall at the top of Belair Road. Meetings start at 1930 with the speaker going first and the formal part after the break for tea and coffee.

ar

John Moyle Memorial National Field Day

March 14 and15

News from...

VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

Meet the Voice & Sewing Circle BBQ

In the Midlands town of Ross on Sunday March 22nd will be the "Meet the Voice" and Sewing Circle BBQ. The Ross Caravan Park is the venue and you are most welcome to come up early and book into the caravan park and make a weekend of it. Registration is from 10 am for the BBQ and events and the cost is $5.00 for individuals and families. Free BBQ facilities arc available. For more details have a chat with Don VK7AY on the Sewing Circle Net which occurs at 5 pm on 3.589 MHz every day. There will also be a Bargain Boot Bonanza for pre-loved amateur radio related equipment at the BBQ starting at 12 noon. Ray VK7VKV is the organiser and all you need to provide is a table or boot to display your goods.

WIA National Broadcast Milestone

January 2009 saw VK7 move into a select group of over 1000 check-ins on a repeater. VK7RAD/RHT reached 1004 check-ins for the WIA broadcast year on January 4. The group we enter includes VK5RAD, VK6RAP and VK4RSC. Considering the number of amateurs in VKs 4, 5 and 6, I think VK7 is doing very well.

VK7 Hosts Annual Linux Conference

Thomas VK7NML let me know that the University of Tasmania hosted the annual Linux Australia Conference which attracts about 600 delegates every year. The conference attracts many big names, including this year Linus Torvalds who wrote the first version of the Linux operating system. There were many amateurs attending including Karl VK5FOSS and Kim VK5FNET who were heard on the local repeaters.

North West Tasmanian Amateur Radio Interest Group

The annual general meeting of NWTARIG was held on January 31st 2009 with the following office bearers being elected: President – Anne VK7BYL, Vice-President – Dick VK7FORF, Secretary – Brian VK7FAYE, Treasurer – Vernon VK7VF and Committee member – Winston VK7EM. The new committee is working towards revitalising the club, by introducing practical training days and social activities. A reminder of the regular Tuesday "nattemet" at 8 pm on VK7RMD, Mt. Duncan which is followed at 9 pm by a replay of the WIA national news broadcast courtesy of Winston.

WICEN South Tasmania

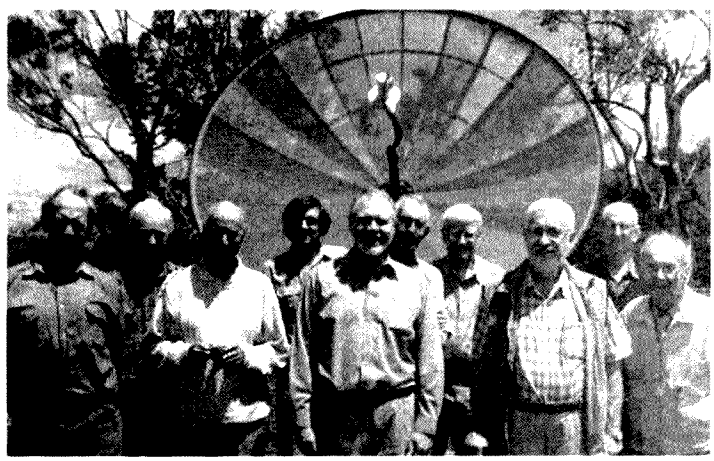
Thanks to Tad VK2LNX/7 and Suzy VK2FSMJ/7 who for the last few months have been honorary lighthouse keepers on Maatsuyker Island (OC-233) in the deep South of VK7 and talking with other amateurs during the regular Maatsuyker Net. Regulars included VK7s ARN, JGD, MAX and FEET, with occasional contacts with FCDW, AN, FMPR, EE, TPE, HSE and Andy VK7WS who is lighthouse keeper at Cape Bruny. February 20 and 21st will see WICEN involved with the horse endurance ride at Orford on the East coast.

Radio and Electronics Association of Southern Tasmania

A big thank you to Charles VK7PP who for many, many years has been involved with the 20 m rebroadcast of the VK7 Regional News each Sunday. Charles and his wife have down sized their QTH and the 2 element quad for 20, 15 & 10 and tower have gone to a good home. Good luck and thanks Charles.



A group of amateurs at the Linux Conference. L to R: Geoff, Karl VK5FOSS, Kim VK5FNET, David VK5DGR, Julien VK3FABR and Neale Ex-VK3XJH at the Conference (Photo by Thomas VK7NML).



Wednesday Afternoon Group – VKs 7DM, 7KRW, 7IR, 7TAS, 7TL, 7MF, 7RO, 7HK, 7BRY & 7JK (Photo by Dave VK7DM).

Congratulations to Gary Wilmott who gained his Standard theory at the January 13th exam event. If you are interested in a Foundation or Standard licence training or any assessments then please let Reg VK7KK know on mobile: 0417 391 607 or email: regemm@ozemail.com.au

The Wednesday afternoon group is back in full swing and meets at the Queen's Domain clubrooms from around 12:00 noon to 4:00 pm every Wednesday. One and all are most welcome to come up, bring your lunch and discuss anything and everything!

ATV Experimenters Night on Wednesdays at 7:30 pm in the ATV Studio, Queen's Domain has also kicked off again with some great content from Amateurlogic. TV and many other sources including some great live material, interviews and satellite feeds from NASA.tv (see dish above!). We are starting to experiment with digital ATV thanks to Jack VK2TRF and hope to report in future columns.

***Errata**: The chart on page 37 of the January/February 2009 edition of this column labelled "VK7WI Broadcast Callbacks 2001-2008" statistics had an axis mislabelled. "Total Number" should have read "Weekly Average".*

WICEN Tasmania (South) Inc

Roger Nichols VK7ARN

The group's purpose is to:

- establish and maintain a core group with a voluntary public service and emergency radio communications capability of the highest possible standard, and to
- work with the broader radio interested community (not exclusively amateur radio) to extend that capability.



The participants, from left to right: VK7s ARN, JGD, Sarah Welch, TPE, IR, CSL, FCDW, FEET, MAX, NXX, TRF, HSE, HSB and BDW.

In recent years, the emergency radio communications aspect has been confined to providing radio operators for multi-agency Incident Management Teams established to deal with major bushfire emergencies. The frequency of these activations is likely to increase following changes to Tasmania Fire Service protocols.

To better prepare for the role, WICEN requested the Tasmania Fire Service to run a training course on Fire Service systems and procedures, tailored for Incident Management Team radio operators, especially those with experience in amateur radio. This took place on 9 December 2008 at the TFS Training Centre, Cambridge. Fourteen completed the course and assessment, which is expected to result in them being awarded nationally recognised certificates of competency.

WICEN says thanks to XYLs

WICEN Tasmania (South) Inc. enjoyed an end of year function by taking a leisurely lunch at a restaurant at Cygnet in the Huon Valley. The function was organised primarily as a means of saying thank you to XYLs for putting up with radio play time over the past twelve months, but also just because.

Its purpose was extended, and an excuse given for a bigger cake, by the birthday of one of the guests, Technical Advisor Dave VK7DM.



Liz (XYL of Chris VK7FCDW), Dave VK7DM, Richard VK7RO and XYL Ruth, Roger VK7ARN



Garry VK7JGD with XYL Michelle.

News from...

VK3

GEELONG AMATEUR RADIO CLUB – The GARC

Tony Collis VK3JGC

WIA Summer VHF/UHF Field Day

This year GARC members had an unprecedented five teams in the Summer VHF/UHF Field Day event.

Team 1: VK3UHF/LUMEG

This was once again the most successful team since the inception of the 24 hour multi operator class, having won every field day in this class, bar one when they came second. The location this year was Barabool Hills at QF21cu and covered 50 MHz through to 24 GHz. The operators were once again David VK3QM, Chas VK3PY and Charles VK3NX.



The Yagis and dishes used by VK3UHF/LUMEG during the contest.

Subject to confirmation, the team believe they exceeded their previous score comfortably.

Team 2: VK3TU

Hot on the heels of Team 1 was 24 hour multi operator team of Ken VK3NW and Bert VK3TU operating from Hick Hill, QF01wx, west of Macarthur.

Their chosen bands were 6 m through to 3 cm and they achieved, subject to confirmation, 4,600 points. This would have been considerably enhanced were it not for the fact of being forced to spend time at the local pub and the distraction of a hot and dusty location on a cattle farm that they had to share with circa 40 million flies!!

Team 3: VK3ALB

This was very much a family affair with Lou VK3ALB, Jenni VK3FJEN,

Urunga Radio Convention

Come to the 'Urunga Radio Convention', on again this Easter weekend, Saturday 11th and Sunday 12th April 2009, in the 'Senior Citizens Hall', Urunga.



Urunga 2 metre pedestrian foxhunt entrants 2008

The longest running Fox Hunt Field Day in Australia, two days of 'Fox Hunting', quizzes, raffles, and pre loved gear, displays.

Inquiries welcome.

Free tea and coffee available for all registered attendees. Numbers are required for the optional meal on Saturday night at the Bowling Club – please notify the Committee.

The old cups from the early days are on display at the convention, and other times at the 'Ocean View Hotel', where some of the early conventions were held.

An adjoining lounge is available for those that want to get away from the activities.

'Urunga' is a quiet village ideally suited to 'Fox hunting'. It is a very relaxing environment on the Kalang River, and has old style charm, ideal for families.



Old Trophies from early Urunga conventions 2008

Close by are Coffs Harbour and Bellingen, or perhaps a drive on 'Waterfall Way' to Dorrigo and the National Park Skywalk, picnic areas and lookouts.

Visit the golf or bowling clubs, or walk to the Ocean on the meandering footbridge for a spot of 'surf fishing'.

Check 'Urunga Radio Convention' web page - http://www4.tpgi.com.au/goldy2/

(Urunga Info on Web, Links page, 'where the rivers meet the sea')

Ken Gold VK2DGT
for the Urunga Radio Convention 2009.

their daughter Ingrid VK3FGRL and son Michael VK3FMIC; also in the multi operator team was Nick VK3NJP. They travelled to Mt Leura, overlooking Camperdown, in QF11nS. It was their first time out together on a field day and they entered the 8 hour Multi-Op section operating under the call sign of VK3ALB. They were active on 2 m, 70 cm, 23 cm and 3 cm. In all they completed a total of 95 contacts and compiled a score, subject to confirmation, of over 2,000 points. A great time was had by all especially the girls who exhibited, according to Lou, a very competitive spirit as operators and they are already planning improvements for the next field day.

Team 4: VK3ATL

This multi operator team comprised Dallas VK3DJ, Tony VK3JGC and Gary VK3FWGR and the bands covered were 6 m, 2 m and 70 cm. operating from Mount Bellarine, locator QF21hu.

Some 34 contacts were made in the 8 hour window. The positioning on the bend of the road attracted a lot of attention from locals driving past as to what exactly they were doing

Team 5: VK3HQ

This team comprised Gerhard VK3HQ and his 12 year old son Daniel filling in the log. They were operating from Mount Tara northeast of Bairnsdale in QF42ck. The two bands used were 2 m and 70 cm SSB with "hand held" beam antennas. Whilst only a small number of contacts was made they included club members VK3ALB and VK3UHF.

Squid Pole in the field - VK3DJ/p2

Post Christmas, Dallas VK3DJ took a solo trip out to NSW operating en route on 7.085 MHz using a home made whip antenna and had mobile contacts all the way from Geelong into NSW. Several days were spent operating /p2 on 6 m, 2 m and 70 cm from Tomaree National Park, on the headland, and also Fingal Bay on the north coast of NSW. On the 6 m band Dallas had SSB contacts with VK1, VK2, VK3, VK4, VK5, VK7 as well as ZL1, ZL2, ZL3 and ZL4.



Left to Right: VK3ALB, VK3FGRL, VK3FMIC and VK3NJP



The four vehicle cluster of VK3ATL on Mount Bellarine overlooking the bay



Dalmeny on the south coast of NSW
The picture at right shows the Squid Pole used by Dallas, as featured in the February 2008 AR magazine. It is of interest to note that the AR magazine article caused a huge demand for this type of antenna pole.

News from...

VK6

Keith Bainbridge VK6XH

As I write this in early February I have to wonder, given the high temperatures the country is suffering at present, if a few more sunspots might help bring the temperature down! It would certainly make a few more amateurs more inclined to spend time in hot shacks at the bottom of the garden. Back to local matters.

From the Hills Amateur Radio Group, a report by Martin VK6ZMS:

The Hills Amateur Radio Group received an early Christmas present when Ian Garnett VK6LCT kindly donated a FT-1000MP MKV Field and a 40 metre Bobtail Curtain antenna. It was un-boxed and on air in record time. The club's call sign VK6AHR could be heard working Europe late into the evening.

The transceiver will also get a good work out in this year's CQ World-Wide WPX Contest as the group intends to compete. Members have also been busy upgrading the station. A TET-4 element tri-band Yagi has been refurbished and is ready to be installed, and this antenna will be rotated by a recently purchased Yaesu G-1000DXA. A new G5RV was installed last year.

HARG will be holding a swap meet on 14 March at their clubrooms on the corner of Sanderson and Brady Roads, Lesmurdie. Doors open at 1 pm for sellers and 2 pm for buyers. This is a great opportunity to offload excess spare parts or to find that rare component you have been searching for. A sausage sizzle and raffle will also be held. The entry fee for buyers is $2 and for sellers $5.

The HARG Morse tutor, on 3.686 MHz, is back on air after addition of a fan, it has been suffering from the heat! We apologise for any inconvenience its absence may have caused. Reception reports are most welcome to hargsec@iinet.net.au.

Not every club is lucky enough to have such a radio donated, well done guys, good luck in the contest.

This past week I received a first report from WA ladies, thanks Poppy VK6YF:

The VK6 radio lunch group first met nearly 30 years ago to give YL's, XYL's and others related to amateur radio operators an opportunity to meet and socialise. OMs accompanying a lady are welcome. The lunches are now held at the Bayswater Hotel, Beechboro Road, opposite the Bayswater Railway Station, at 12 noon on the last Wednesday of each month, except December. There is a choice of snacks, buffet or a la carte meals; pensioners receive a discount on buffet meals.

Anyone interested in joining please contact Poppy VK6YF on 6278 4339 or Maree Preston XYL of Jim VK6JP on 9364 1779; we would like to meet you.

While on the subject of the AR Ladies I would like to wish Christine VK6ZLZ a speedy recovery from her recent surgery. We hope all goes well.

From the South West an update from Rob VK6JRC, from the Southern Electronics Group:

Hello to all. On Friday January 2, 2009 Wes VK6WX, Bevan VK6VX and I headed down to Albany and installed the VK6RAL 70 cm repeater at Mt Clarence. The installation went quite smoothly and the repeater is now on air. The existing equipment was rearranged in the rack cabinet, then the KL450 repeater and 70 cm antenna duplexer was fitted in the rack. Also installed was a 2 m / 70 cm diplexer which allows both repeaters to operate off a single dual band co-linear antenna on the Mt Clarence tower. Both the 2 m and 70 cm repeaters have been interfaced so they can be linked via a DTMF command if required.

Progress is being made to upgrade the Mt Barker 2 m repeater and this will be linked full time to the Albany 70 cm repeater. The repeater frequency is currently 438.725 MHz (-5.00 MHz offset). Reports of coverage for the new repeater are welcome.

Due to QRM issues SEG will be changing the repeater frequency in the near future. LIPDs are a problem for us even in low density areas! The new frequency (subject to WIA and ACMA bureaucracy) should be 439.950 MHz.

SEG are also planning a Foundation Licence Course and assessment session around March 2009. More details when they are finalized - on the website: www.hamradio.org.au

With Bob VK6POP's recent promotion from the Advisory Committee to being a Director of the WIA, we would like to congratulate him on his new position, and to look for a suitable replacement. Several people have shown interest and a new member will be announced shortly. Watch this space.

The VHF Group had an extraordinary general meeting at the home of Fritz VK6UZ on Sunday 25th January. As it was the Australia Day long weekend the usual Monday meeting was abandoned as Wireless Hill is a prime location to watch the fireworks display and access is impossible!

Fritz arranged BBQ facilities and opened his impressive shack/home business premises for the day to members who enjoyed the chance to test out antennas on his 'temporary test range'. Everything from 6 metres to 2.4 GHz was put through its paces. He also assisted members in checking out dubious equipment, and found a few problems; good fun, and lovely cakes from his XYL!

There is little to report from the NCRG this month. Work is still progressing on the club premises, the new Elecraft radios are getting a thrashing and the log books are filling rapidly. Some members have taken to spending the night out there and working 20 and 40 metres and at the rate of hundreds of QSOs a night. Who says the bands are dead! They are keeping the club QSL manager Neil VK6NE extremely busy.

A reminder for all of you, the NCRG Hamfest is on again in August, Sunday the 2nd at the usual location at the Cyril Jackson Recreation Centre, Fisher Street, Ashfield. A 9 am start for visitors. Hopefully we can attract the Eastern States traders again this year after their excellent support last year and the year before. Put it in your diaries now and you will not miss out. Information can always be obtained from me as I am usually involved in some capacity, even if it is only compere for the day!

That is it from sunny WA, good DX and stay safe.

ar

QTC VK4
First Published July 1927 "Of, By and For the Amateur"
News from for Queensland Radio Amateurs

Christopher Comollattie VK4VKR
email vk4vkr@wia.org.au
qtc@wia.org.au

Soggy North Queensland

The Townsville region has been under the weather so to speak, following some ferocious storms which included lightning zaps.

Some of the equipment at the Mt Stuart repeater site has had to be tended to or replaced upon inspection when weather conditions permitted. On Jan 3rd VK4TUB and VK4FP removed some equipment from service after spurious emissions were detected. This gear is not expected to be returned to service until late February.

The VK4RTL 28.270MHz beacon has been off air since 24th December 2008 after a lightning storm. On Saturday January 10, Don VK4MC undertook a site visit and found the beacon power supply was cactus! Don replaced the power supply with a spare he had on hand and restored the beacon to operation.

Australia Day in Queensland

A hardy band of hams formed an advance party in north Queensland for the Australia Day Long Weekend .

On Friday afternoon they bunkered down for the 100 mm plus rain that fell into the wee small hours of Saturday morning. The rain stopped, more hams and support crew arrived and soon more gear was deployed.

Richard VK4FRJG had a very long wire deployed in a very high tree coupled to his IC-706MKIIG with a MFJ portable tuner and was getting contacts on most of the regional nets.

Col VK4UCM had an even longer wire which he tried, along with his standard auto tuning antenna, to join the daily HF Radio Club nets. Gavin VK4ZZ deployed a five element Yagi connected to a FT-8800 and non-interruptible power supply to maintain VHF contact with those travelling to the event and later deployed a two band trapped dipole connected to an IC-706MKIIG for use on 80 and 40metres.

Phil VK4HSV outdid everyone with the radio van - sporting radios and antennas for all bands, colour television, sound reinforcement equipment with DVD playback and enough lighting to support night cricket matches and enough creature comforts for a month.

By late Saturday afternoon the ZT and TLB dampers were distributed for Happy Hour and the group discussed what activities might take place during the rest of the weekend. By Saturday evening it was decided to bring forward some of the Australian activities to Sunday as the weather forecast indicated more torrential rain on Sunday night. A game of ZT's Articulate was played through Saturday evening, with everyone awarding the best caller award to Tony VK4TJS, as his infectious enthusiasm got everyone going!

On Sunday the Australian activities just kept going, damper was cooked, workshops on whip cracking and boomerang throwing were undertaken, along with more radio operating, extra damper making and some serious loafing. After dinner on Sunday Evening and with participation in the North Queensland Net completed, a relaxing evening of Karaoke took place. The launch of the new and fantastic TARC raffle was conducted by Ray VK4NET as well.

A heap more rain fell early Monday morning and put paid to any swimming in the creek on Australia Day; however it did not stop the raising of the Australian Flag with a bang provided by Ray VK4NET's canon (loaded with talcum powder and the bang yelled out for effect).

This report leaves out a heap of stuff that happened and does not do justice to the fun and relaxing time had out in the field mixing Australian activities with Amateur Radio and good company.

Many thanks to everyone who organised, attended, visited and otherwise made the weekend happen.

RADAR

Rockhampton and District Amateur Radio Club are going Art and Craft. On Sunday March 8th RADAR club members will be attending the Rockhampton Heritage Village Art, Craft and Hobbies Day on Boundary Road North Rockhampton A display of HF, VHF/UHF and APRS will be in operation for the general public to view. Also on display will be WIA leaflets and foundation manuals to welcome possible new members to the WIA and amateur radio in Australia.

Be a part of the great day by dropping by and saying hello or even better if you are on your radio somewhere out there: say hello via IRLP node 6973 to VK4VKR and the group. Our WIA broadcast relayed by Mike VK4LMB is 0900 local time, so give us a little time for our club chat and callbacks around this part of the day. If you have internet access, check out the recently updated web site for more RADAR Club news and events: http://radarclub.tripod.com/news.htm

Redcliffe and Districts Radio Club Inc

Redcliffe and Districts has another fine copy of QRM with a very detailed layout of their radio operations.

Contact David Close VK4DC president@redclifferadioclub.org.au for details on obtaining your free emailed copy on a regular basis.

continued next page

Silent Keys

Sjoerd Jongens (Sojo) – VK7ASJ - Formerly VK7ZSJ/VK0SJ/ZL5BA

It is with great sadness we inform readers of the very sad news that Sjoerd "Sojo" Jongens died on Thursday 13th November in hospital in Amsterdam, surrounded by his family.

He did not regain consciousness after a push bike accident. He was a good mate, a tireless worker and a superb engineer, that "flying Dutchman". Sojo was very involved in the 1983 Heard Island DXpedition. Sojo joined Greenpeace in 1987, when he took on the job of radio operator at World Park Base in Antarctica. He was a veteran of two winters in Antarctica with the Australian Antarctic Division (Mawson '80 and Maca '86) before he joined Greenpeace at World Park Base. Sjoerd was all geek. His single-minded obsession with all things digital meant that he was constantly finding new ways to bend new technologies to Greenpeace's purposes, and he broke new ground for two decades. He was possibly the grumpiest support person in the history of IT support. And yet beloved by everyone who caught a glimpse of the heart behind the gruffness.



Sojo running a ham sked on the inland route to Scullin Monolith by dog, Spring 1980.

Vale Sjoerd.

Tom Maggs AAD, Alan VK7KAJ, Harvey VK7HK and Greenpeace International

Doug Newton VK3DN

Doug was born on 5 June 1922, and passed away on 29 July 2008, aged 86.

Doug became interested in amateur radio while growing up in Castlemaine, and was licensed in 1939 at the age of 17, with the call sign VK3DN.

Doug saw war service between 1941 and 1946, as a Wireless Operator/Flight Sergeant.

After the war he joined the PMG as a supervising technical officer, eventually retiring after 35 years of service.

I first meet Doug when he moved to live near me in 1985. This was the start of a long friendship. Doug was a great mentor and teacher. He made many friends on the air over the years, both local and DX, on CW and phone. He was always helpful with his knowledge and a gentleman on air to anyone who worked him.

Doug is survived by his wife of 60 years Dallas, and sons Gary VK3DGE and Lee.

Submitted by Ray Dean VK3RD

VK4 continued

SCARG

The Sunshine Coast Amateur Radio Group consists of about 51 mature and experienced amateurs. Meetings are held on the first Saturday Quarterly at 51 Castlehill Drive, Nerang at 1400 local.

The venue is adequate, having its own packet setup, telephone, fax and database, listing the group and some 250 local amateurs. Refreshments are laid on with a pleasant outdoor setting if weather permits. The group has its own repeater, VK4RBT, on 147.800 MHz (with minus offset) and the group's call sign is VK4WIF. A daily check-in takes place at 0900, and members are invited to call in.

The annual membership fee is $15.00 to cover the expenses of the monthly newsletter that is posted to all members. A board of five members, including a Secretary and Treasurer, guided by a Constitution, administers the Group. The emphasis is on friendliness between members; a liaison HF net held on 3.605 MHz Thursdays at 1930. Join in and be welcomed to this friendly group. For information on any matter please contact the Secretary, Ken Ayers VK4KD jessy8@optusnet.com.au

WICEN

WICEN Queensland holds a net every Sunday on 7075 kHz from 0830 (2230 UTC). The net calls in regular stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3600 kHz.

Mix it with other WICEN ops and call in on the net!!

Until next time, 73

VK4VKR (IRLP 6973)

On the side and listening

ar

Christine Taylor VK5CTY

Time to renew your subs - plus

With the next newsletter there should be a subscription renewal. So this is the time to consider finding an overseas amateur to sponsor. It is very interesting to have a contact with a YL in another country and it is a great way to make new friends and the cost is quite low.

Maria VK5BMT is our Sponsorship Secretary: she can be found through the information in the newsletter or QTHR the callbook. She should be able to find you a sponsor in another country. All the Sponsorship Secretaries keep in touch.

Usually you will get a reciprocal sponsorship for your new friend's country so you will receive their newsletters, just as they will now receive yours. It you sponsor someone in a country with a different language you may have to seek help but there are a number of translation programs available through the internet to help. It is fun even when you have to sit down with a two-language dictionary – a challenge.

If you should travel to your sponsor's country it is marvellous to have someone on the spot to tell you the best places to visit, to know when places are open or closed and probably to take you to some of those places.

The John Moyle Memorial Field Day

This weekend contest is on in the middle of March. While many clubs go to particular locations, every Australian amateur can participate from their home station.

All the competition details were in *Amateur Radio* in the February edition (p 47) and there will be lots of activity on all the bands. You can operate just for a six hour period or you can work through the 24 hours. Because the Contest is arranged in blocks, you can even get some sleep!!

Repeat contacts can be made in each three hour block, so you can accumulate a high score. Operating on VHF and UHF gives you multipliers for distance, so you need to read the rules carefully.

This contest is held in recognition of the contribution John Moyle (a past editor of AR) made to Australian amateur radio. Without John we might have lost our allocation of band space on 20 metres.

Compared with the rest of the world, Australia has a very small population so our voice at an international level is very small.

We had a very vocal advocate in John Moyle when we really needed it.

John was very keen on amateurs being able to operate under emergency conditions, using batteries or a generator, which is why this contest is a Field Day Contest.

If you or your club participate, please let me and/or Dot VK2DB know about it and send us pictures. That way we can tell others what you are doing.

Please read your Newsletters. Dot lists all the forthcoming contests. If you participate in the contests, please tell me or Dot how you went, and how you enjoyed it. This will encourage others to "have a go", too.

Did you use the AX prefix on Australia Day?

As radio amateurs, on special occasions we are allowed to us AX instead of VK before our callsign. It is fun to do and it recognises that the day is special.

Thanks to Shirley VK5JSH all of us on the Monday night net on the 26th January did use it. We stumbled a bit at the unfamiliarity but we waved the flag.

It was Leslie VK5HLS's intention to use the prefix on the other HF bands later in the night but we have not been told how well she did.

Next time we have a special day, maybe Anzac Day, why not try it on your friends to see if they recognise the significance.

Regular luncheons

Now that the holidays are over your diary should be filling up with all the regular meetings and skeds and all the luncheons. It is great to meet again and exchange news or make plans for future events. But, again, please let us know what you are doing – with photos if possible.

I know that in VK5 we have a luncheon on the second Tuesday of the month, at the Museum starting at 1200. VK3 has regular lunches on the first Sunday of the month at a different venue each time and irregular ones at other times.

In VK6 the luncheons are on the third Thursday of the month in North Perth.

If you are visiting a different state, always get in touch with the State Rep to see if there is a regular lunch or if a special one can be arranged. We like to meet each other face to face as well as on the air.

ar

"Hey, Old Timer..."



If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194
or call Derek VK3XY on **03 9563 6909** or Bill VK3BR on **03 9584 9512**,
or email to raotc@raotc.org.au
for an application form.

Contests

Phil Smeaton VK4BAA

Contest Calendar for March to May 2009

Mar	7/8	ARRL International DX Contest	SSB
	14/15	RSGB Commonwealth Contest	CW
	14/15	John Moyle Memorial National Field Day	CW/SSB/FM
	21/23	BARTG RTTY Contest	RTTY
	28/29	CQWW WPX Contest	SSB
April	4/5	SP DX Contest	CW/SSB
	4	QRP Hours Contest	CW/SSB
	4/5	EA WW RTTY Contest	RTTY
	11/12	Japan International DX Contest	CW
	11/12	Yuri Gagarin International Contest	CW
	18	Holy land DX Contest	CW/SSB
	18	TARA Skirmish Digital Prefix Contest	PSK
	18	Harry Angel Memorial Sprint	CW/SSB
	18/19	YU DX Contest	CW/SSB
	25/26	Helvetia Contest	CW/SSB
	25/26	SP DX RTTY Contest	RTTY
May	9/10	CQ-M International DX Contest	CW/SSB
	9	VK/Trans-Tasman 80 metres Phone Contest	SSB
	30/31	CQWW WPX Contest	CW

Commonwealth Contest

Beru, otherwise known as the Commonwealth Contest, will be taking place on 14th and 15th March 2009. As run previously in 2007 and 2008, it is proposed again to organise a Commonwealth Team Contest, to run in parallel with the normal Commonwealth Contest.

Steve VK6VZ is the Australian team organiser and Steve advises that the team competition rules limit team headcount to ten operators. The 2009 squad below was chosen by looking at the top 13 Australian scores in the Commonwealth Contest 2008 and first offering these operators the chance to be in the team for this year. These would make up the team of 10, plus three reserves. If any of these 13 could not take part this year (or did not wish to) then their place was to be offered to the competitor with the next highest score. This seems the fairest way of choosing a team - and encourages those who would like to be part of the team for 2010 to put in the best possible score for 2009. Eddie VK4AN has recently moved house and does not have an antenna system as yet, so the team has changed a wee bit to accommodate accordingly.

The team for 2009 at the time of going to print consists of:

1. Barry VK2BJ
2. John VK4EMM
3. Kevin VK6LW
4. Steve VK6VZ
5. Alan VK6BN
6. Mike VK6HD
7. Martin VK7GN
8. David VK2NU
9. Les VK4BUI
10. Russ VK4XA

Reserves

1. Karl VK2KM
2. George VK4XY

The contest requires a slightly different approach to antennas and bonus/multiplier planning and it makes an interesting difference to be competing as part of a geographically widespread team. Why not have a go in the contest and try for a team slot for yourself.....? With the team consisting of such salubrious individuals, qualifying is likely to be hotly contested once again. Give them a call – they will be glad of the points!

CQWW WPX SSB 2008 Results

The results were issued recently – it is always good to see VK stations putting VK on the world stage.

Congratulations everyone!

Call	Category	Score	QSOs	Operators
VK1MJ	SO HP ALL	19,803	77	
VK2APG	SO HP ALL	1,890,910	1,482	
VK2ATZ	M2	2,794,902	1,533	VK2KRM VK2NU VK2AEA VK2OJ VK2RD VK2FHRK VK2FMDB VK2BPL VK2KEG
VK2BCQ	SO HP ALL	99,814	255	
VK2CA	SO HP ALL	461,829	631	
VK2CCC	SO QRP 20 m	4	2	
VK2FHN	SO HP ALL	53,212	187	
VK2GR	SO HP ALL	2,324	34	
VK2KDP	SA LP ALL	39,346	148	
VK2XN	SO HP ALL	1,013,274	963	
VK3FM	SO HP ALL	93,155	201	
VK3TDX	SO LP ALL	4,040	47	
VK3YXC	SO HP ALL	17,877	100	
VK4AMC	SO LP ALL	41,921	153	
VK4ATH	SO QRP ALL	28,116	118	
VK4BAA	SO LP 40 m	196,093	257	
VK4FJ	SO LP ALL	80,640	234	
VK4FRAJ	SO LP ALL	114,708	309	
VK4HAM	SO LP 20 m	304,965	474	
VK4VDX	SO LP ALL	10,602	73	
VK4VSP	MS	14,416	88	VK4VSP VK4VCC
VK4WIL	M2	668,168	775	VK4SN VK4ZD VK4KYL
VK4XES	SO LP ALL	1,809	27	
VK6AHR	MS	4,680	50	VK6ACA VK6ZMS VK6FDX VK6POP
VK6FAU	MS	772,455	805	VK6FAU VK6NU VK6JX VK6EH VK6YEL VK6APK VK6HRC VK6TT (the VK6ANC team on a junket!)
VK6FDX	SO LP ALL	8,580	69	
VK7GN	SO HP ALL	1,220,865	948	
VK7WPX	SO HP ALL	198,162	359	
VK8AA	SO HP 10 m	66,462	215	

QRP Hours Contest

Mike Dower VK2IG Contest Manager

Saturday, 4th April, 2009

1000-1059 UTC – CW/RTTY/PSK31

1100-1159 UTC – SSB

NOTE: SUMMER TIME STILL OPERATIONAL ON THIS DATE

Sponsored by the CW Operators' QRP Club, the AIM of this contest is to make as many contacts as possible within a one-hour period using your choice of mode. Whilst it is hoped that the event will be strongly supported by QRP Club Members, it is open to all licensed amateurs.

Output Power:

Preferably 5 watts, but not more than 10 watts of carrier power. This is to stress the QRP nature of the event.

Modes:

First Hour – CW/PSK31/RTTY (2100-2159 Eastern Daylight Saving Time)

Second Hour – SSB (2200-2259 Eastern Daylight Saving Time)

Frequencies:

CW	3.500-3.535 MHz
PSK31/RTTY	3.620-3.630 MHz
SSB	3.550-3.590 MHz

Exchange a three-digit serial number starting at 001 and incrementing by one for each new contact.

Score one point per contact.

Logs must show the name, address and callsign of the operator and the number of points claimed.

Send Logs by mail to: Mike Dower VK2IG, PO Box 8013, Gundaroo, NSW, 2620 or by email to: qrphours@exemail.com.au Please consider using email and sending the log immediately after the event. Otherwise logs should be received by Friday, 17th April, 2009.

Certificates will be awarded to the highest scorers in each Mode in each State or Territory.

Note: Email is the preferred method of sending the log, but all entrants must include their postal address (you cannot know if you will be a section winner!!).

Results for the QRP HOURS 2008 Contest

CW			
1st	VK2ENG/QRP	Mike	20 points
=2nd	VK4ZW	Ray	12
	VK4TGL	Gerard	12
4th	VK3TX	Deane	6
5th	VK4JAZ	Grant	4
6th	VK3JS	Ian	2

SSB			
1st	VK4ATH	Tom	16 points
=2nd	VK7VH	Vince	13
	VK2ENG/QRP	Mike	13
4th	VK2ASU	John	12
5th	VK2MTW	Terry	11
6th	VK4AMC/QRP	Al	9
7th	VK2CJC	Jack	7
8th	VK7XGW	Wayne	4
9th	VK6FBVB	Brian	1

SPECIAL EVENT

GippsTech & WIA AGM

see page 53

Harry Angel Memorial Sprint

Ian Godsil VK3JS Contest Manager

1000 Z – 1146 Z Saturday 18th April, 2009

This an annual Contest to remember VK's oldest licensed operator, Harry Angel. Please note the time length of the Contest, 106 minutes, Harry's age when he died in 1998. It is open to all HF operators.

Object is to make as many contacts as possible on band 80 metres, using Modes CW and SSB.

Categories: Single Operator; Multi-Operators.

Sections: CW, Phone, Mixed and SWL (please choose ONE ONLY).

Frequencies: CW: 3500 - 3535 kHz, Phone: 3560 - 3595 kHz.

Exchange RS(T) and serial number starting at 001.

Score **two points per CW QSO** and **one point per Phone QSO**.

Stations may be worked once only per mode. Logs must show time UTC, callsign worked (both callsigns for SWLs), mode, RS(T), serial numbers sent and received for each QSO.

Sending Logs: email is the preferred method to vk3js@zoho.com (Please note that even for email logs, the entrant's name, callsign and postal address are required, as per the Summary Sheet.)

Send written Logs to

Harry Angel Sprint,

121 Railway Parade, Seaford 3198, by Friday, 1st May, 2009.

Send summary sheet showing name and date of Contest, name, address and callsign of entrant, category entered, points claimed and a declaration that the rules and spirit of the Contest were observed.

Note: Please submit your logs as soon as possible after the Contest and do not forget to include your postal address (you cannot know if you may be a section winner!).

If SSB frequencies are very busy, please go above 3600 kHz, but stay below 3620 kHz.

Results Harry Angel Sprint 2008

From Ian Godsil VK3JS Contest Manager

SSB			
1st	VK2AEA	Vlad	83 points
2nd	VK7VH	Vince	68
3rd	VK3SSB	Ash	67
4th	VK4ZD	Bill	66
5th	VK4FDKR	Cory	65
=6th	VK2BV	Waverley ARS	64
	VK4VDX	Roland	64
8th	VK2KDP	Craig	60
9th	VK4VCH	Catherine	53
10th	VK5MRW	Robert	49
11th	VK4ACB	Wade	45
=12th	VK2FREK	Richard	39
	VK3SAY	Philip VK3JNI & Andrew VK3FAFG	39
	VK3ZPF	Peter	39
15th	VK4DGG	Mark	38
16th	VK4FJ	Warren	36
17th	VK8AV	Alan	35
18th	VK4TGV	Peter	34
=19th	VK4DGS	Dave	33
	VK4UD	Robert	33
21st	VK4ION	Gail	32
22nd	VK2ZCM	Craig	31
=23rd	VK4TAA	Peter	30
	VK4JRO	Ross	30
25th	VK4FSOS	Shaun	27
=26th	VK4CAB	Anskie	23
	VK4ATH	Tom	23
	VK3LCD	Gary	23
29th	VK7JGD	Garry	22
30th	VK3PRA	Ruben	21
31st	VK2HBG	Gerald	15
32nd	VK2JHN	Wal.	11

CW			
1st	VK3KE	Jim	10 points
2nd	VK3TX	Deane	8
3rd	VK3JS	Ian	2

MIXED			
1st	VK2AYD	David	76 points
2nd	VK4DX	Mike	75
3rd	VK2END/QRP	Mike	41
4th	VK2CTN	Chris	18

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DX - News & Views

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Well the first, of what could be several really wanted Countries activated – Desecheo. The following Press Release # 4 - dated January 26th, 2009 brings us up to date.

We have reserved the special call sign K5D for our upcoming Desecheo operation. The operation will begin late in the day on 12th February.

Because Desecheo is so very rare (#6 worldwide, #3 in Europe and # 2 in Asia) there are many, many hams worldwide that need KP5 for an all-time new one. Therefore, we are asking that you not contact the DXpedition on any band/ mode that you have confirmed from a previous DXpedition. This will allow the people who really need a new DXCC entity a better opportunity to get through the pileups.

Our objective is not to establish a world record for contacts... there will be no "greenies", no boxes to check, no competitions for most band/mode QSOs, no certificate or awards for contacting the DXpedition more times than anyone else. So, if you have KP5 already confirmed on a particular band/mode, we respectfully ask that you exercise restraint. If, late in the DXpedition, we are calling CQ for contacts, we will welcome your call.

The team has encountered higher expenses than anticipated. These mainly involve the transportation and feeding of other personnel that will be travelling to the island with us. Approximately ten other personnel will share our campsite and facilities for the duration of the DXpedition. They will be on Island with us to provide security and carry out field research. Therefore, we ask that you consider a contribution to the DXpedition to help with these incremental expenses. Just go to (http:// www.kp5.us/) and click the button that reads "How you can Help".

Nine New Zealanders will put Chatham Island, ZL7, on the air March 6-11. Included are ZL2AL, ZL2AAA, ZL2LE, ZL1BYZ, ZL2CC, ZL2RVW, ZL3AB, ZL2WG and ZL1ALZ. Duncan, ZL3JT will act as pilot station back home in Christchurch (zl3jt@paradise.net.nz) The team will stay at the Chatham Fishing Lodge in the Kaiangaroa fishing village at the northeast tip of the Chatham Islands: www.chathamfishingexperience.co.nz/

VK9LA Lord Howe DXpedition - March 23rd to April 3rd 2009. It was good to receive the following update from VK4FW.

By the time you are all reading this article all of the equipment will have arrived on the island by boat from the mainland. The sixteen operators will keep seven complete HF stations and one on six metres operational daily as we endeavour to give the deserving a new one. Lord Howe Island has a ranking on the world wide wanted list of 63, and as high as 28 throughout most parts of Europe. The www.odxg.org/vk9la.htm web site will have all the latest news releases on it as well as a complete operating schedule prior to departure.

QSLing chores will be handled by VK4FW. We are trying to perfect an online system for this DXpedition which will enable a much faster QSL turnaround.

IZ3ESV is replacing VU3RSB who was forced to withdraw. Tony will acquit himself well as he has vast experience operating from the IR4M contest station.

Please note that a special time has been set aside to work the VKs and larger Pacific region on 80 m. Full details are on the web site.

Dave G3TBK will shortly resume operations from the Caribbean Island of Saint Vincent, again using the callsign J88DR. Operation commenced in the late evening of Sunday January 18th and will continue until mid- March. Activity will be on CW, SSB, RTTY and SSTV, using all HF bands. QSL via G3TBK, either using the Bureau or direct – but note no further cards will be answered until mid-March. All cards received for previous operations by J88DR have now been answered.

Jim K9PPY says he is planning to head to Fernando de Noronha, PY0F, in March. We are still waiting for more details.

Word has it that **Lars Boehme DL9LB/MM0DWF** is heading back down to South Georgia and should be QRV as VP8DIF next month.

AP2AHSF is **Axel DL7UPN** operating from Islamabad, Pakistan. The four letter suffix was issued by Pakistan Telecom Authority (PTA) on Friday January 16th. He works in Pakistan for one or two weeks at a time and hopes to be QRV in his spare time from his office in the capital city.

OH6CS is going to the Canary Islands, where he will be QRV as EA8/OH6CS in the CQ WPX SSB Contest on March 28 and 29. This will be a single-op 15 metre only entry. QSL via LOTW.

5X1NH will be back on the air March 11th "for a couple months" volunteer work in Fort Portal, as Nick G3RWF goes back to Uganda. This is in the west near the Congo border. Nick says he will arrive in time for BERU. From previous operations, Nick has 20,000 QSOs in the log and may do some digital modes this time, though he says he is not very good at it. And he will try to make improvements to his low band antennas. QSL via G3RWF.

QSL manager Dianna KB6NAN is closing the log for the following N4BQW operations: VP5/N4BQW, January, 2005 - the log is on LoTW; KH9/N4BQW, October/November, 2002 and January and June of 2003 - paper logs. Dianna will keep the logs open for one more month to give you a last chance to get a card. SASE please. Chuck Brady N4BQW became a silent key in July 2006.

Seth SM0XBI is active again as J79XBI from Dominica (NA-101) from 17th January until around 1st April. He will operate SSB only. QSL via home call, bureau preferred.

Gerd DJ4KW V31YN and Gisela DK9GG V31GW are active from Belize from 19 January to early March,

including a number of contests. From 26th February to 3rd March look for V31YN/p who will be active from NA-180. QSLs via home calls (direct or bureau), or LoTW.

Vlad **RA4LW** says he is the new QSL manager for **ER4DX** and **ER0WW**. QSL direct only to Vladimir V. Ryabov, P.O. Box 2, Dimitrovgrad, 433508, Russia.

SV9/DJ7RJ, Willi Przygode, will be on from Crete starting February 24th and continuing for three weeks. He plans to be on CW and SSB. QSL to his home call.

OM2DX is now working for the Embassy of the Slovak Republic in Hanoi, Vietnam for the next three years. On 5th January he got his licence, and he will operate as XV9DX and 3W1M on all bands CW, SSB and digital modes. QSL via OM3JW.

Bernhard DL2GAC is in Honiara, Solomon Islands, and expected to stay until 28th April, with a side trip to Temotu Province in March (see H40 below). Bernhard plans to operate SSB as H44MS with a focus on 80 and 40 metres. QSL via home call, direct or bureau.

Sigi/DK9FN (CW operator) and **Hermann/DL2NUD** (EME operator) will join **Bernhard DL2GAC** (H44MS) in late February for a 2-3 week operation from Temotu Province. Their flight to Lata is planned for 2 March, and Sigi will go back home on 16 March. He plans to operate CW only on 160-6 metres, hopefully as H40FN (the callsign he used back in 1999). Whatever callsign Sigi will be using, the QSL route is via HA8FW (bureau preferred).

Bernd VK2IA will be active from Cocos (Keeling) as VK9AA from 14 to 27 March 2009 using 160 to 10 m, CW and SSB. QSL via DL8YR.

Good luck in the pile-ups.

Special thanks to the authors of *The Daily DX* (W3UR), *425 DX News* (IIJQJ) and *QRZ.DX* for information appearing in this month's *DX News & Views*. For interested readers you can obtain from W3UR a free two week trial of *The Daily DX* from www.dailydx.com/trial.htm

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Spotlight on SWLing

Robin Harwood VK7RH

The Age of Obama dawns on the SW World

January saw quite a great deal of activity on HF despite abysmal propagation. As mentioned in last month's column, Israel's patience evaporated and they launched a bloody incursion in the Gaza Strip, just weeks before the onset of a new American administration, led by the first Afro-American president, Barack H. Obama. Neither the Israelis nor the Hamas faction were in any mood to compromise and the fighting went on. Over 1500 were killed and thousands were wounded and hundreds of buildings were flattened to rubble.

The Israelis destroyed the Al Aqsa radio and TV building and senders but apparently a mobile studio managed to uplink audio and video via satellite to the outside world. Audio was observed on 5835 and 5875 in Arabic around 1900 with the call of "Al Aqsa". The senders were believed to be from one of the Gulf countries and was a relay into the Middle East. The fighting subsided just a few days before the Presidential inauguration but tension still remains.

The inauguration of Barack Obama naturally was the focus of the World's media and it was extensively covered on shortwave. The ceremony was broadcast live in many languages or dialects but the various satellite delays or audio feeds made for very odd effects, especially where two stations were on the same or adjacent channel. I gave up and watched it all on TV.

It did not take long for the new administration to change things. Ever since 9/11, a clandestine signal targeting Afghanistan has been noted via various European and American sites. The station used the callsign of Radio Solh but programming never varied with music and announcements at identical times. It is highly dubious that anybody bothered listening to the same music and announcements over the 7 year period. Anyway Radio Solh went silent within 40 hours of Obama taking office.

I also mentioned last month that Americans were going to close their analogue TV signals as of the 17th of February. The Obama administration quickly brought in legislation in Congress to extend this to June because it was estimated up to 6 million people had not made the transition to digital, despite coupons and other incentives. Most of these were in the lower income bracket.

As you may be aware, March 29th sees the implementation of the A-09 broadcasting period at 0100. This coincides with the introduction of Daylight Saving in Europe and the former Soviet Union. Expect quite a raft of changes especially between 7100 and 7200 because as from that date, broadcasters are supposed to vacate this band, allowing hams to use it freely. The section between 7300 and 7500 is now reserved for broadcasting. But there are a few broadcasting stations who may be reluctant to move, because their governments are not members of the ITU. This includes North Korea on 7100 and 7140 and Taiwan on 7130. Also there are several clandestine stations in Africa targeting Somalia, Eritrea and Ethiopia around 7100. It is going to be very interesting to listen on this piece of spectrum.

As part of this move, Canadian Time Station, CHU in Toronto was forced to move from 7335 to 7850 on January 1. For many years broadcasters have impinged on CHU and the last straw was when the Americans absolutely refused to shift WEWN and WWCR off 7735 despite Canadian protests. CHU can be heard on 7850 but signals are poor here compared to 7335. CHU is also heard on 3330 and 14675.

Well that is all for this month. Do not forget you can email me at vk7rh@wia.org.au

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Peter Paradigm VK2TXT
email: coordinator@amsat-vk.org

Predictions on the go

As many of you know, for the most part, I normally operate the FM birds in the QRP/portable mode. While this is not every amateur satellite operator's cup of tea, it can be very rewarding particularly when you are travelling.

When discussing this topic with others, one particular question comes up over and over again. How do you run your pass predictions while you are on the road? Knowing when a pass is to begin and where the bird will be in the sky while working away from home is the subject of this month's column, with a look at two mobile satellite tracking applications.

Low tech or hi tech?

Quite often, many people overlook the low-tech solutions in favour of the flashy, battery-hungry methods offered by modern gadgetry. Before going on to outline the hi-tech options, it is worth thinking about good old paper and ink.

On many occasions when I am planning to work the birds while I am bushwalking, during a drive in the countryside, or taking an extended break from home, my initial inclination is to take everything with me but the kitchen sink – HTs, chargers, extra battery backup, multiple antennas, a 240 V inverter, solar panels, a laptop, a PDA, AR and so on. Just as often I have to force myself to stop to consider the reasons for going on the trip in the first place and the feelings of my travelling companions who have to endure a car full of my radio gear and electronics!

Okay, I have to admit, quite often I do end up taking all that kind of gear with me when I am going away for a few days or more. But sometimes, I will just grab my HT, the Arrow antenna and run-off a three line detailed printout from my prediction software. It is not quite the same as seeing a ground track and a satellite footprint in simulated motion

AMSAT-Australia

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About AMSAT-Australia

AMSAT-Australia is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-Australia uses the Yahoo group AMSAT-VK as the primary point of contact for those interested in becoming involved in amateur radio satellite operations.

If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-Australia monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-Australia HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

across a computer screen, but it does the job in the end.

If you have any sense of direction or a compass, with a little practice, it is not all that difficult to work out the path of a satellite from a set of printed predictions. Who knows, if you do not take all that stuff along, you may end up spending a bit more quality time with family and friends, rather than worrying about why the solar cells are not efficiently charging the Gel Cells and so on.

The hi-tech way

If you do end up deciding to pack the shack into the back of your vehicle, a laptop or notebook computer preloaded with up-to-date KEPS should be at the top of your list. It is also a very good idea to check that you have the correct time set on your computer before you head off. It is not critical, but I like to synchronise my notebooks clock with "time.nist.gov" over the internet. In Windows XP/Vista/W7 you can do this from the date/time icon in the control panel and then switching to the "internet time" section of this dialog box.

If you are really keen and need your predictions to be accurate to the second, you might like to pack your GPS so that you can enter your exact latitude and longitude into your prediction package when you arrive at your destination.

There is another option, what I am calling "the middle way". No, I am not going all Zen on you, but rather suggesting an alternative, that is, to use your mobile phone to run your predictions. This is an option which is bound to be favoured by the XYL.

The middle way

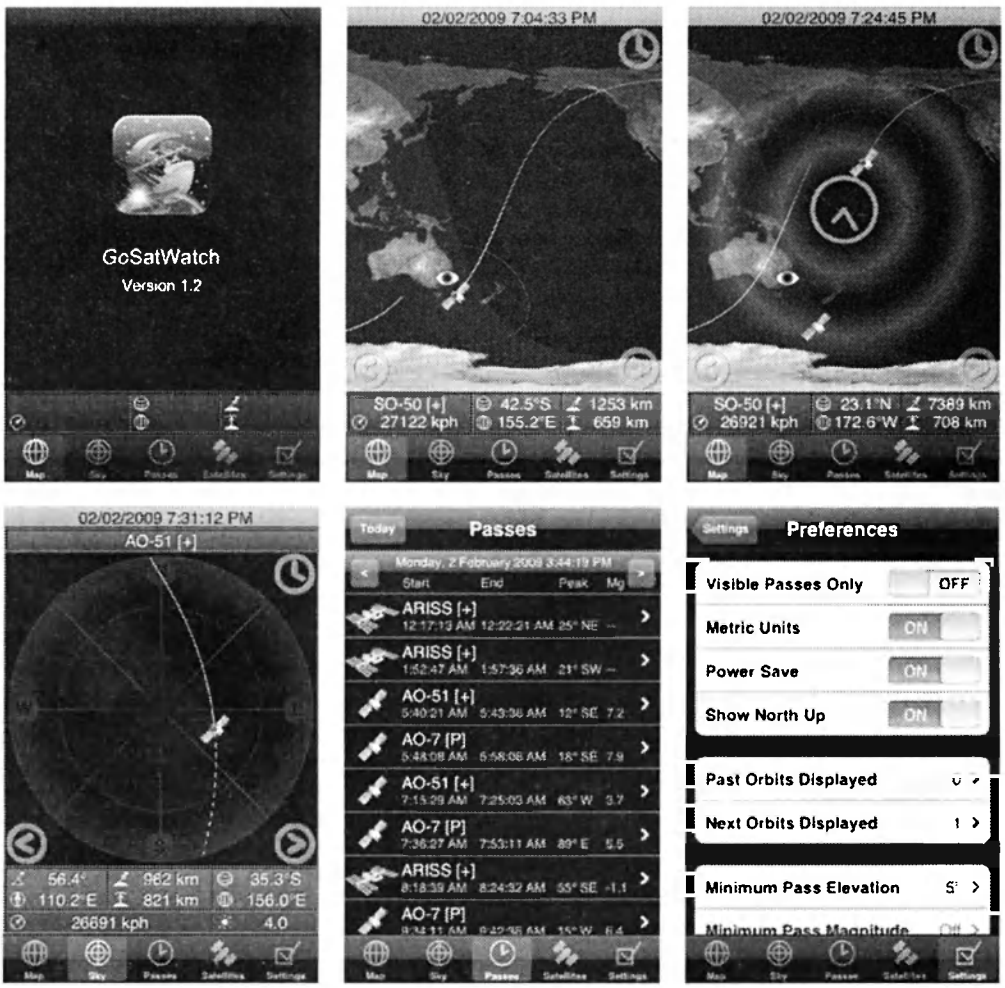
Today, when we are talking about a mobile phone, what we are really discussing is a computer which has mobile telephony and a myriad of other fancy options built-in. If you are into technology, your phone probably includes a built-in camera, mp3 player, internet connectivity and a GPS receiver. This hardware is more than capable of running satellite predictions given the right software.

I am going to briefly review two packages which run on a stock standard Apple iPhone 3G. No modifications or "Jail-Breaking" is required to run these programs. I have chosen to look at the iPhone because it has a very large following in Australia and by the time you read this will have more than one satellite tracking application available. These apps will also run on Apple's iPod Touch - a media player, PDA and internet device.

The iPhone will serve well to illustrate what is possible if you choose to use a mobile phone for satellite predictions. I have listed some alternative programs which will work with other mobile telephone handsets at the bottom of this article.

GoSatWatch

At present the most capable of the satellite tracking 'apps' for the iPhone and iPod Touch is called GoSatWatch. This program, available via the Apple 'Apps Store' for $A12.99, was originally developed to assist visual satellite spotters. Since the program's launch, the author has acknowledged that more amateur satellite operators have shown interest than have his target audience. To cater for the wants and needs of these operators, the author has begun to roll-out features specifically aimed at amateur radio hobbyists.



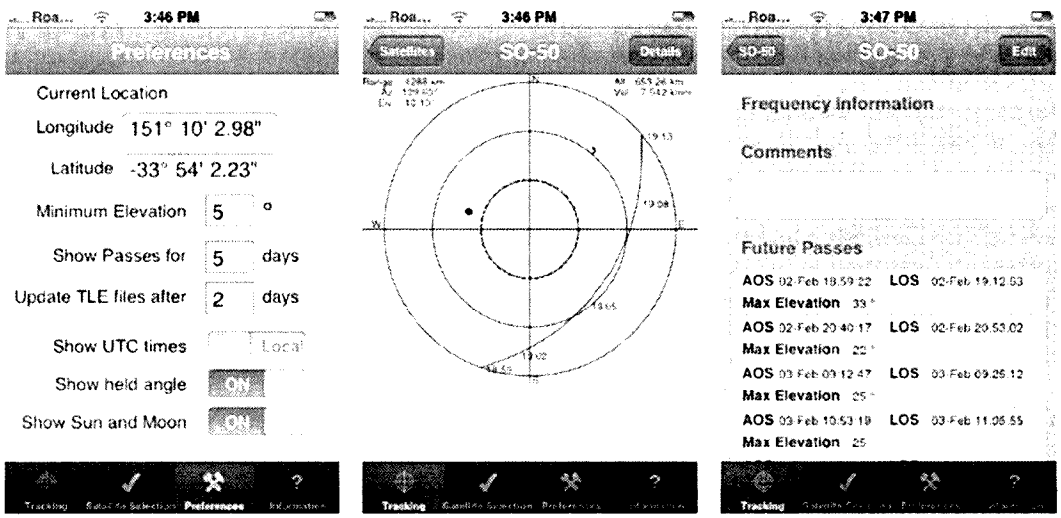
GoSatWatch sample screens

Since the program's first release, I have been in contact with the author to offer some suggestions and corrections. It is very nice to find a software publisher who is prepared to listen to their users and who will make changes to their product in a timely fashion. As this issue goes to press, GoSatWatch is in version 1.2. By now, this may have changed and a newer 'Pro' version may also be available with even more features specifically aimed at hams. I am going to walk-you-through getting this program up and running on your device, reviewing the apps features as we go.

After installing the program on your iPhone, GoSatWatch

or GoSat will prompt you to update the KEPS/TLE files and to set your current 'home' location. Both of these tasks can utilise some of the iPhone's build-in features. If your phone has access to the internet via WiFi or your mobile network, GoSat will automatically download the default TLE files.

Another useful feature, appearing on the 'Edit Location' screen, is the ability to take your current GPS location and to make that your 'home'. This feature is very useful when you are operating away from the shack! You can also select your location from a list or enter your latitude and longitude manually. Note that the iPod touch does not include a built-in GPS. Once you have entered your 'home' location, it is verified on the world map displayed on the bottom of the screen.



VK3ANZ's Satellite Tracker sample screens.

After updating your 'home' location, the program will then display a list of the default TLEs. Note that all satellites are selected by default. At this point you can go off and explore the features of GoSat if you must. During my evaluation, my next step was to customise this satellite listing. This is done from the 'Settings' tab by touching the 'Orbital Elements' button. I would suggest that you follow along and do the same before playing.

To make the program less cluttered, remove all of the default TLE files by touching each of the red '-' circles which are shown to the left of the TLE names. If you have been using your iPhone for some time, this method of deleting items from a list will be familiar to you.

Next, add a new TLE called 'Amateur' by supplying a URL pointing to this file, in this case "http://www.celestrak.com/NOROD/elements/amateur.txt". Before completing this step, GoSat gives you the option of testing the URL just in case you have made a typo.

Return to the setting tab by touching the normal 'back' button, touch the preferences button and change the "Visible Passes" switch to off. When set to the 'on' position, only satellite passes which are visible to the naked eye are predicted. You might also like to move the 'Show North Up' switch to the on position, which will make the radar view a bit more intuitive.

Return to the "satellites" tab and then force a TLE update by pressing the circular refresh icon located at the top right of the screen.

You should also choose which birds are 'selected' by touching the Amateur TLE on this screen. This will bring up a list of all the satellites contained in the TLE file. Tap each of the birds you wish to track. It is much easier to manage GoSat if you only track a few birds at a time. You are done, and ready to view amateur satellite passes and predictions.

Most of your time with GoSat will be spent in the 'Map', 'Sky' or 'Passes' tabs. Let us take a brief look at each of these screens in turn.

The 'Map' screen, accessed by touching the 'map' tab, shows a finger scrollable map of the world, with each of the selected birds plotted in real-time. You can select any particular satellite by touching its plotted icon. Once selected, some satellite specific data will be shown at the bottom of the screen. You can also select a particular bird using the arrows at the bottom right and left of the map.

More information about the selected satellite can be viewed from the 'Sky' screen, more on that in a moment.

In addition to the real-time plot, it is also possible to show the positions of the selected birds at any particular time in the future or past, by moving the hands of the clock control. To do this, you touch the clock face displayed at the top of the screen, which in turn displays a larger clock surrounded by two concentric circles, superimposed over the map view. To change the simulated time, you run your finger around the circumference of either circle – the outer circle controls the 'minute' hand and the inner circle controls the 'hour' hand. Move your finger clockwise to move forward in time, and anticlockwise to move backwards.

Touch the clock face which is located at the top right of the screen once again to return to the real-time plot mode.

The 'Sky' view shows a radar-like view of the sky with the track of the bird plotted across this 'circular view'. Satellite data such as elevation, distance, lat/long, altitude etc. is also displayed on this screen.

The 'passes' screen is where you will run your forward pass predictions. GoSat will predict passes for the current day, the next day or the previous day by touching one of the three buttons at the top of the screen. If you would like to see predictions for future days, just keep touching the ">" button. At present, you are unable to run predictions for days before one previous day.

GoSat will produce a prediction list in a second or so. Once completed, you can then select a particular pass prediction by touching it, and then you can move to either the map or sky views for something a little more meaningful.

In summary, GoSatWatch is a nifty little iPhone app which will do most of the things you might expect from a portable program.

continued over

An Australian Satellite Tracker

At the time I was writing this column, Susan VK3ANZ sent in an email to AMSAT-VK to tell us about her iPhone satellite tracking project. At this time, VK3ANZ's "Satellite Tracker" was just released to selected amateur satellite operators in its first beta version. I have included some very basic information here to promote this local product.

"Satellite Tracker" will be made available free. The program is setup to automatically download all the TLE files from the internet from Celestrak.

The program is quite basic, supplying pass prediction data and a real-time sky view. The interface is clean and uncluttered, which will appeal to those who only need a future pass listing and a set of prediction data.

An interesting feature is the apps ability to show the approximate angle of inclination of the iPhone handset itself. This is achieved using the iPhone's/iPod Touch's onboard accelerometers. This feature has been included to assist in finding a satellite in the sky.

Like GoSat, Satellite Tracker is also able to use the iPhone's built-in GPS to capture the user's home location.

VK3ANZ's package is very well documented with extensive built-in help. While the package was very limited in beta, the app has a lot of promise. The author has intentionally left out a map view to keep the app simple. I do feel that the lack of a map view will limit this package's appeal to some users, as this view can be the most useful when working in the portable mode in areas unfamiliar to operators.

If you are looking for a simple, cheap and straight forward application which generates pass prediction listings with the added bonus of a real-time sky view, this program is for you.

I believe that it is well worth watching this product for future improvements which, at a low price, will appeal to the casual user.

No iPhone, no problem

Assuming that you own a reasonably up-to-date mobile which supports the installation of additional programs, one of the following applications should work with your handset. If your cell phone only supports Java applets, I would suggest that you should try "SATme" as listed below for Nokia phones.

The following alternative software packages, which will run on various other mobile phone platforms, will have different feature sets from the programs which we have looked at above; however, all the applications listed below will all compile basic satellite predictions.

If you are using a Nokia or other "Symbian S60" based phone, you can try a program called "SATme".

On Window Mobile based smartphones, take a look at "SatCE".

For Palm based smartphones, search for "PocketSat" or "PocketSat+".

For more information on these programs, visit their websites which can be easily found using Google.

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VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith - VK3HZ

January has been another spectacular month for propagation. We even had some good Es openings on 2 m right up to the end of the month.

On January 8th, another strong Es opening occurred with VK4 and later VK2 working into VK3, VK5 and VK7. On the Tropo front, VK5AKK worked across the Bight to VK6JRC on 2 m.

The evening of the 11th, another Tropo opening across the Bight saw Wally VK6WG working into Adelaide on both 2 m and 70 cm.

On the evening of the 12th, conditions were particularly good between Melbourne and Mt Gambier, with Colin VK5DK working Mike VK3KH at S9+ on 23 cm. Colin was also hearing the 23 cm beacon in Gippsland at S4.

The following day – the 13th – conditions were again good across to ZL with Bob ZL3TY in the thick of things. He worked many VK2s and VK4s and into VK3 as far as central Gippsland. The opening continued into the 14th, although signals were down somewhat.

On the 15th, the VK2 to ZL path was stronger than ever with VK2s working across to ZL1, 2 and 3 on both 2 m and 70 cm. At 2022 Z, Ross VK2DVZ worked Bob ZL3TY on 1296.1 MHz achieving what is believed to be the first VK to ZL South Island contact on 23 cm. Just to prove it was not a fluke, they again worked at 0643 Z.

The 16th produced good Tropo conditions from VK3 to VK5 and VK5 to VK6, although it did not quite stretch across enough at the right time to produce any VK3 to VK6 contacts. Nevertheless, it was looking good for the Summer VHF/UHF Field Day, commencing the next day.

And so it was. There were excellent conditions across the south of the country and many good contacts were had on bands from 50 MHz to 24 GHz. On the evening of the 17th, VK5SR in Mt Gambier was well over S9 into Melbourne on 1296 MHz.

The good conditions continued for Sunday 18th. At one stage during the morning, I listened on 2 m to VK5SR working station after station around Perth. The conditions unfortunately failed to stretch to Melbourne though, but many stations on the hilltops (and there were many in this region) achieved some excellent contacts. Norm VK7AC on the north coast of Tasmania was also in the thick of the action and at about 2130 Z, he worked Peter VK6KXW - who is about 90 km east of Perth – on 2 m for his first VK6 on that band. Norm also worked VK6ZWZ and Don VK6HK – it was Don's first 2 m VK7 contact after many years of trying. Signals from Peter rose to S8 and so he and Norm QSYed up to 70 cm. At about 2300 Z, they made contact over a distance of 2862.5 km, breaking the VK National 70 cm record.

On the afternoon of the 20th, there was yet another Es opening across to ZL. At 0400 Z, Nick ZL1IU worked across to Norm VK7AC. Then things shifted, and ZL3 was being worked in eastern VK3. At the time, I was talking to Mike VK3KH on the telephone and he mentioned that things were happening, according to the VK Logger. I promptly went to the shack and immediately heard a mini ZL3 dogpile on 144.1. Over the next half hour, I worked 6 ZL3 stations – 5 of them within 20 km of Christchurch. Whether this concentration was due to conditions or just available stations, I do not know. Alan VK3XPD also joined the action. ZL3AAU worked as far across as Garry VK5ZK in Goolwa.

The following evening (21st), in a similar manner, Bob ZL3TY suddenly appeared on 144.1 calling CQ on CW. We managed a quick contact before he disappeared. Bob also worked VK3DUT, VK3ZYC, VK2DVZ and VK2ZT.

The afternoon of the 24th saw another E's opening from VK4 to VK3 and VK5. At the same time, a Tropo opening occurred between VK5 and VK6. The Tropo opening continued for the next few days, with VK7 to VK5 contacts also happening.

Then a high-pressure cell settled over the Tasman Sea. It produced extreme temperatures in Melbourne (43, 44 and 45 on consecutive days) but also produced excellent Tropo conditions from VK to ZL for several days. ZL1, 2 and 3 were worked by VK2 and VK3. Of note, Nick ZL1IU was a good signal into eastern Victoria, but his signal was attenuated somewhat (read "totally") in Melbourne by Mt Baw Baw, which is directly in the path. Nevertheless, Nick was kept busy and on 2 m, he managed to work Gippsland stations VK3DUT, VK3DMW, VK3VHF, VK3BBB, VK3VFO, VK3ZYC, VK3UCQ, VK3WRE/P (Mt Tassie – also on 70 cm), VK3BQJ and VK3EK, VK3BBB, VK3ALZ and VK3ZQV. Jim VK3II who is further south and would have a clearer shot over the hills also worked Nick. Further west, Nick worked Andrew VK3OE on Mt Dandenong fairly regularly, possibly via knife-edge refraction off Mt Baw Baw into the duct, which was apparently very high – some 3000 m.

Towards the end of the opening, on February 1st, some interesting contacts were made. In Melbourne, Ron VK3AFW was busy compensating for his decades without a ZL on 2 m. He writes: *I became a bit frustrated at only being able to hear a sniff of audio so I asked Andrew VK3OE to ask Nick ZL1IU to listen for someone calling on CW The result - Nick gave me 559 and I gave him 529. RR and 73s completed a QSO that would not have been possible without much more than 400 W on SSB. I guess it was the heat that made my hands sweaty and my CW even worse than usual. I am too old to get excited about a QSO!* We all obviously have to find another challenge for Ron now!

A little later Mike VK3BDL in the bay-side suburbs of Melbourne, not to be outdone, worked Nick on 2 m. Then, in a very optimistic move, Mike asked Nick to QSY to 70 cm. Just as they QSYed, signals came up on 70 cm and they exchanged 52/53 reports. Then Nick's signal on 70 cm vanished

before any of the other stations hearing him had a chance to work him. It was almost like there was an aircraft giving lift into the duct briefly before flying on. Although the distance of 2579 km fell several hundred kilometres short of the new 70 cm record, it was probably a more difficult contact considering the mountainous terrain at the VK3 end of the path.

Going back to January 30th, starting at about 0030 Z, we had another Es opening between VK4 and VK3 & 5 – very late in the season. The opening lasted for about 1½ hours and was jumping all over the place from Brisbane to FNQ.

Finally, on the morning of January 7th, a Tropo opening formed between VK2 and ZL3, reaching across to Christchurch on the far side of NZ over some very substantial mountains. It began with VK2 stations working Bob ZL3TY on the west coast. Then, at 2014 Z, Steve VK2ZT worked John ZL3AAU in Christchurch. VK2DVZ, VK2IDM and VK2IJM joined the fray, together with ZL3NW and ZL3CU, both also in Christchurch. Ross VK2DVZ worked Bob ZL3TY on 70 cm, supporting the claim that it was a Tropo opening.

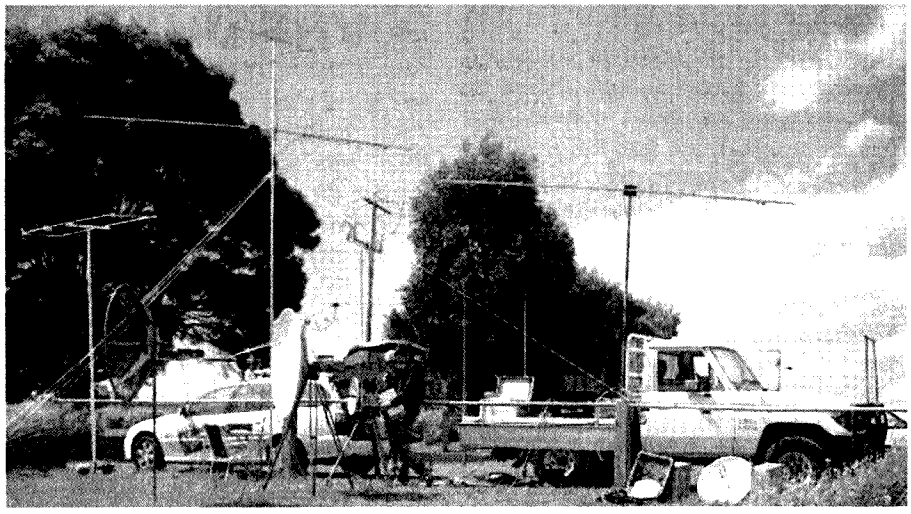
As I said at the top, January has been a bumper month for VHF/UHF operators. About the only thing that this season has not yet produced is a VK3 to VK6 Tropo opening – something that normally occurs each year. That is to come, no doubt.

Spring VHF/UHF Field Day

Alan VK3XPD and Michael VK3KH submitted the following report on their activity during the Spring VHF/UHF Field Day in which they were placed first in the 8-hour Multi-Operator section. My apologies to Alan and Michael that this was not included in the January issue.

Once again, Michael and I decided to team up and tackle the ever-popular 2008 Spring Field Day on Saturday, November 15, 2008.

As usual, the first decision that had to be made was the choice of an operating location(s). The proximity of John's Hill Reserve near Olinda in QF22RC and the Old Coach Road north of Berwick in QF21QX presented an opportunity to "multiply" our Points score for the Multi Operator, 8-Hour Category by operating from two Grid Squares.



VK3XPD / VK3KH Field Day Setup

We both arrived at John's Hill Reserve at circa 1300 EDST. Although it was bright and sunny, it became immediately obvious that the gusty winds were going to be a problem for us.

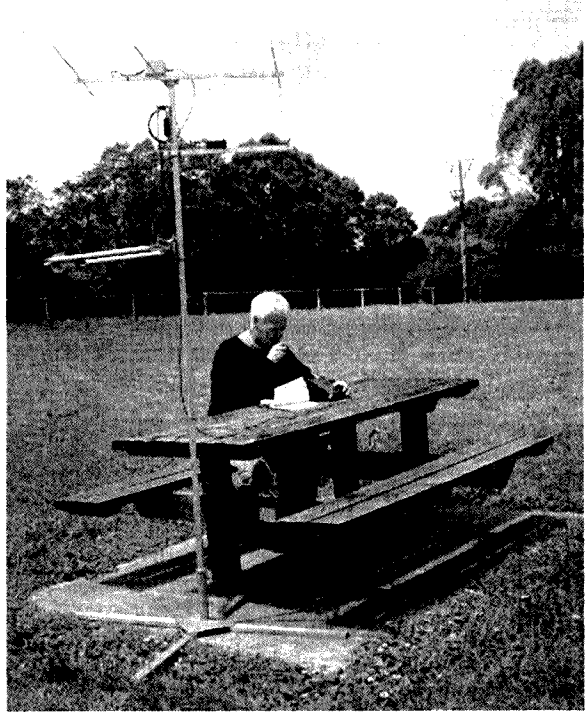
Additionally, since our previous visit to this site, the Council has installed barriers to prevent vehicles from entering the grassed areas. This restriction made things a little difficult in that we were compromised in choosing the best "vantage" point for best/maximum Contest activity.

Over the next hour or so we progressively set our gear up with the aim of a proposed start at 1400.

During this time, Rob VK3ESE who lives nearby dropped in with his "very" portable station...an FT-817 on 6, 2 & 70 cm. After a bit of "banter", Rob left us and set himself up on a nearby Picnic table.

Finally after a quick look around the bands, Michael was the first to start the contest with 6 metres through to 23 cm. To Michael's great surprise, one of the early contacts was Joe VK7JG on 2 and 6 metres from Launceston. The Geelong crew (VK3UHF) in the Barabool Hills west of Geelong seemed to be everywhere all at once! Along with the EMDRC team of VK3ER in the Wombat State Forest, the Frankston club of VK3FRC, at Mt Martha, and the Ballarat Crew VK3AIG, things were looking pretty good. Noticeably quiet were several of the usual Latrobe Valley portable operators.

As usual the Microwave Bands were taking a little longer to set up - mostly due the high winds. Finally at about 1500, the Geelong crew of VK3UHF was rapidly worked on all Bands from 2.4 GHz up to 10 GHz. However, with the poor propagation, Microwave Stations further afield were quite difficult to find and work because the gusty winds made "pointing" the dishes a difficult process.



Rob VK3ESE during the Spring VHF Field Day

Similarly, we had planned for longer distance QSOs on 2, 70, and 23 cm into VK1, VK2 and eastern VK3 but again we were to be disappointed due to the poor propagation on the day.

As the afternoon progressed and the initial urgency of as many QSOs on as many bands as possible abated, Rob VK3ESE visited us again after he had packed away his gear. Next in for a chat was Rob VK3LOL and later Peter VK3TPR dropped by.

Since John's Hill is a relatively popular vantage point with great views - there was also the usual tourist traffic walking the dogs or just out for a bit of a drive. Some would drop by for a chat so Michael, ever the diplomat, would explain what all the paraphernalia was. One unfortunate soul with "lady friend" in tow drove into the car park, turned towards us to get a better look but failed to notice a large red gum post. "Kerunch" was heard as he clipped the post and bits of a blinker assembly were scattered all around. Needless to say they departed soon after and we did not get the opportunity to explain what we were doing.

As the afternoon progressed, the temperature cooled significantly, the sky was threatening and the wind became even gustier. Charlie VK3NX was keen to try for a 24 GHz QSO. Not long after setting it up however, my 24 GHz transverter was blown onto the ground. Only minor damage was incurred but was it still on frequency?

So we tried again but unsuccessfully. A few minutes later, disaster struck. The tripod, dish and transverter were blown over again and this time the damage was terminal. The flexible waveguide was crushed.

Later in the afternoon and during a time of "repeat" 3 Hour QSOs, the wind blew over the 1200 mm Dish and Tripod with the 3.4 and 5.7 GHz transverter hardware attached. Amazingly, no damage was done.

The cold windy weather was taking its toll on both us and the gear. So with the failing light and with Michael complaining of numb fingers we decided it was time to pack up and relocate to the second Grid Square in Berwick. I was however not really looking forward to setting up all the Microwave gear all over again.

On arrival at Berwick, Michael was able to park his car such that the now-tethered antennas mounted on a roof rack structure were pointing directly at Geelong. He then quickly worked the VK3UHF team on 2, 70 and 23 cm from inside the car Easy!

Similarly, I had been thinking about the easiest way of getting these "repeat" Microwave QSOs with the minimum of effort. So, instead of the tripods and dishes, we set up the little card table for the transverters to sit on. The 2.4 GHz band was first off the rank. David VK3QM already had an "Ident" running, so I simply connected the 2.4 GHz feedhorn via a short length of coaxial cable to the transverter. Although it was pointing vertically up, I found the "Ident" immediately with S8 signal strength. Quite amazing - and this is Microwaves! The identical process was then repeated for the other microwave bands with great success.

With these "repeat" QSOs completed, we packed up and headed home for some well deserved creature comfort.

So, a very successful day, but we did come away with one definite plan for improvement. As on previous occasions, the gusty winds once again caused us considerable problems, more so on the Microwave bands with their vulnerable, tripod-mounted "wind catching" dishes. Multiple dishes for multiple transverters also means more effort and time is needed for setup and pack up. So, a rotatable dish securely mounted to the vehicle with a switchable multiband feed will be constructed.

2.4 GHz Activity

Several new stations are now set up to operate from home on the 2.4 GHz band. Ross VK3MY in Olinda, with an excellent takeoff to the west, is currently running 1 watt with plans for more power. Colin VK5DK in Mt Gambier has sorted out his antenna setup and is now also QRV on the band. During a recent opening, at 1307 Z on February 3rd, they successfully worked each other with 5x1 reports over a distance of 400 km.

Alan VK3XPD reports that the VK3RXX Beacon at Camberwell on 2403.530 MHz has been repaired and returned to service. It is running 10 watts into an Alford Slot at about 10 metres. He would be interested in any signal reports.

10 GHz Activity

Chas VK3PY reports on an impromptu 10 GHz Field Day of sorts. Sunday January 11th was a big day on 10 GHz in VK3. Prompted by a visit from Jack VK2TRF who was in VK3 on a work assignment and had brought his 10 GHz gear with him, a number of us obliged him by taking our 10 GHz equipment into the field to try to work him. And work him we did.

Jack set up his station at Loch in South Gippsland (near Korumburra). A number of VK3s, including a first-time operation led by Lou VK3ALB and Nik VK3NJP, took the opportunity of getting out into the field to welcome Jack on 10 GHz. Other operators who took part in activities were Charlie VK3NX, Alan VK3XPD, Ken VK3NW, Ralph VK3WRE, Russell VK3ZQB and Colin VK5DK and myself, VK3PY, with David VK3QM who had lent his gear out in anticipation of next weekend's contest and had to ride shotgun on my equipment. In all we had nine separate 10 GHz stations set up. Jack managed to work everyone other than VK3ZQB and VK5DK, both of whom were a little out of reach in the late afternoon heat. Had it been possible to continue into the evening, things might have been different.

Being somewhere near the middle of the geography, I was fortunate to work everybody. Seven QSOs (I will not count Charlie who was only about 500 wavelengths away...) and five grids on 10 GHz in one outing. Not a bad afternoon's haul. Most satisfyingly, Lou and Co. received a good introduction to microwave operation pending next weekend's Summer VHF Field Day.

From Wally VK6KZ: a check in November has confirmed that the VK6RST 10 GHz beacon at Mt Barker near Albany is operating but has drifted in frequency. Instead of the target frequency of 10368.564 MHz it was found on 10368.633 MHz. The beacon was heard over a 46 km path to Albany (well off the main lobe) at the QTH of Wally Green VK6WG. Please look for it when conditions are promising. The Bight has been bridged once - why not again?

Work is proceeding on corner reflector antennas to allow a 1296 MHz beacon to be placed on Mt Barker with major lobes towards the Eastern states and Perth.

Technology Convention 2009

For anyone who might be in New Zealand in April, Technology Convention 2009 is being held in Hamilton over the weekend of April 11-12.

The convention is about amateur radio related technology and is somewhat like our GippsTech event.

Registration Forms can be requested by email at techcon09@nzart.org.nz

They are looking for speakers/ presentations/demonstrations for durations of up to 45 minutes. Please contact Kevin Murphy ZL1UJG at rfman@xtra.co.nz if you can help in this way.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur – VK7MO

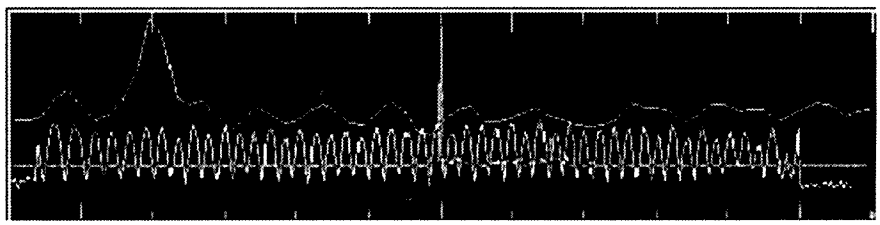
Welcome to Michael VK3KH, Nigel VK3GY, Tim VK3JJM and Rob VK3ESE who have all been trying out WSJT.

David VK2JDS provides an update on his activities with his solar powered EME station on 1296 MHz. "In December I worked Sergei RW3BP who was using 4 Yagis at -17 dB from Moscow, then again the next day using Sergie's 2.8m dish with -13. JT65c. The DXpedition to Namibia has stimulated a lot of activity on 23 cm EME with many stations active. 1296.065 has been the main frequency in use, 1296.090 was used by the DXpedition. So far I have worked stations from Russia, Switzerland, Czech Republic, Canada, Netherlands, Estonia, Austria and the Ukraine on JT65c. We need more operators on 1296. The world is looking for us. As an example, the contact with Christoph HB9HAL: He had gone on a mission to get a 'Worked All Continents' on 1296 digital JT65c and was keen for a VK station, I was it on 13 Jan 09 and he has now completed his WAC in less than a week! OK1DFC had me as his 60th digital contact on the 8 Jan. He designed the Septum circular feed many of us use on our dishes for EME."

It is possible to take advantage Aircraft Enhancement using JT65a as the Doppler shift is usually sufficiently low on two metres. The effect a tropo-scatter signal adding or subtracting in phase with the Aircraft Enhancement signals produces a characteristic ripple on the green signal strength line of the WSJT display such as shown in the screen shot below of Jim VK3II's signal in Hobart.

This variation does not affect the ability of WSJT to decode the signals correctly and Aircraft Enhanced signals can be decoded on two metres with transmitter powers of around one watt on a 500 to 600 km path.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@ bigpond.net.au.



The Magic Band – 6 m DX

Brian Cleland – VK5BC

January has proved to be another great month on 6 m with the band open somewhere in VK/ZL on all days of the month. During the month, Paul A35RK continued to make regular contacts into all states of VK & ZL and Willem DU7/ PA0HIP had a good opening into the eastern States of VK.

VK6 enjoyed an excellent month with many openings to the eastern states and ZL, Paul A35RK again working into VK6 (over 7000 km) on 1st, 3rd and 4th January. Many days produced good ZL openings with some of the better openings occurring on the 2nd January when Kerry ZL2TPY worked VK6 ADI, ARA, AKT, OX and JR and on 22nd January when Rod ZL3NW worked the VK6 ADI, ZWZ, RO, RZ and JJ. On the 13th January Norm VK7AC worked VK6 JR, GL, JJ, HX, ADI and OX and the 24th January was also an excellent day with many VK6s working all eastern states & ZL.

Openings in the eastern states occurred on most days and are too numerous to report with some short skip openings on the 1st, 2nd & 4th January with many VK3 to VK5 contacts being completed. ZL contacts were also regularly completed from all states with the band often open from VK5 to ZL as well as VK7 and VK2, the 1st January being particularly good.

Following the marginal opening on December 14th reported in last month's notes, a much better opening to Willem DU7/PA0HIP occurred on January 8th. Willem reports the opening started about 0425 UTC and lasted until about 0700 UTC with signals much stronger. QSB was very deep and quick; sometimes signals came out of the noise, rose to S9, to be back in the noise after 20 seconds or so. Signals from VK7 were the strongest - 59++ at times. 31 different VK stations were worked (some twice) as follows:

VK1DJA, VK1ZQR (QF44);

VK2KIT (QF43), VK2BTS (QG60), VK2BA (QF69), VK2IF (QF68), VK2PB (QF49);

VK3AKK, VK3AMK, VK3GJW, (all in QF21), VK3DUT (QF33), VK3EK (QF32), VK3XQ, VK3JWZ, VK3CAT, VK3OP (all in QF22);

VK4SIX, VK4SDD, VK4AFC, VK4BEG (all in QH22), VK4ZDP (QH32), VK4CAG (QG62), VK4ABW (QH30);

VK5ZK, VK5NY (both PF94);

VK7AC, VK7XX, VK7BBW (all in QE38), VK7ZIF (QE37);

VK8RR, VK8MS (both PH57).

All stations (except VK7BBW) were worked on SSB.

Then on January 13, Willem heard VK8RR calling CQ and heard some other weak stations on SSB, but no QSOs resulted. Willem also reports that back

in November (24th) he heard ZL2AAA weakly, but also no QSO and is still waiting his first ZL and will probably have to wait until next season.

Good work Willem and thanks for keeping an ear out VK way, I am sure all VK and ZL stations eagerly look forward to working you next season.

Willem runs 100 W from an IC-746 into 2 x 5 element Yagis spaced 5 m apart. Picture on this page:

(Editor's note: We do recommend that amateurs do NOT climb towers unless the appropriate safety equipment is used.)

I received the following Email from Andrew 9V1TT:

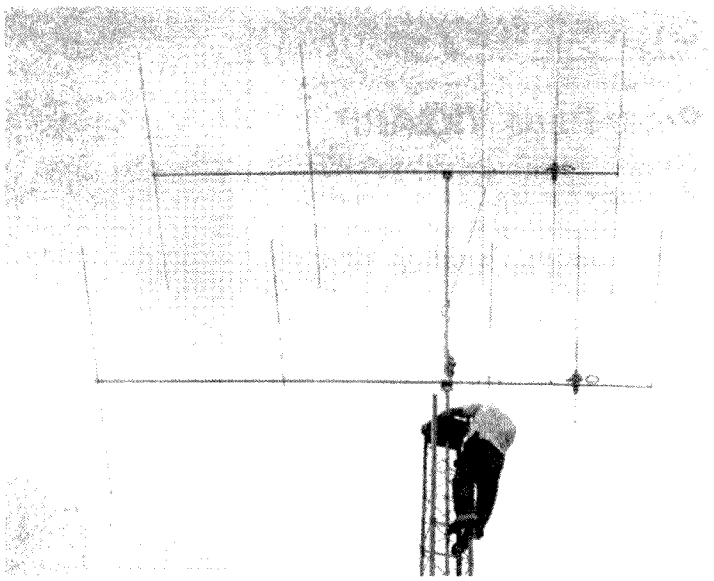
Have been reading your articles in AR for some time now. Keep up the good work.

I just wanted to touch base with you and let you know that I have commenced operation on 6 m in Singapore as 9V1TT. It has taken quite some time for the establishment of my station, and the approval for 6 m operation. As you will know Selva 9V1UV has been active for some time now, and I even worked him under my old call VK8AH from Darwin.

Like Selva, I have very limited conditions attached to my approval from the InfoComm Development Agency (IDA) that is the regulatory body in Singapore. I am only permitted 65 W ERP and operation between 50.0-50.2 MHz. This is quite a limitation, particularly in these poor conditions. Years ago (at the last sunspot peak), I was able to work 5HIHK with 10 W and a dipole so I guess things will get better when conditions improve!

Although this limitation is significant, I guess it puts me in the same league as some beacons, so my commitment (as a dedicated 6 m operator) is to have the gear on when I am in the shack. Actually 6 m is my only real interest, so this will not be too hard. I am currently running an IC-7800, into a Cushcraft AR-6. I have a 3-el M2 that I will put up in due course.

I have a lot of work to do now. As VK8AH I had a 2 WL M2 (9-el) and 400 W. It took me a lot of years to get 6 m DXCC. I think it is going to be an even greater challenge now trying to get it with 65 W ERP! Currently there are only two operators (that I am aware of), Selva and me, that have privileges for 6 m. I am re-learning CW. Trying to build the speed up and will be operable on both SSB and CW. I will look out for you guys and I am in a position to QSL direct. Address is VBOX 882019, Singapore 919191.



Willem and his Yagis

Let us hope we can get some good conditions so that I can make Singapore a reality for those that have not worked here yet.

73, Andrew 9V1TT (VK8AH)

Thanks Andrew, great news for all VK 6 m operators. It's great to have stations from near neighbouring countries looking out for VK contacts which have proved to be very feasible in the bottom of the sunspot cycle.

Please send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

ar

Preliminary Notice

GippsTech – Special Edition

1-3 May 2009

This year, the WIA Annual General Meeting will be held in conjunction with a special technical conference: GippsTech – Special Edition.

Topics include:

- **Lightwave communications (Rex Moncur VK7MO)**
- **Tropospheric Ducting: From Ross Hull to present understandings (Andrew Martin VK3OE)**
- **A new band: 137 kHz – an introduction to VLF communications (Drew Diamond VK3XU)**
- **Software Defined Radio – Principles and Practice (Phil Harman VK6APH)**
- **Am I really on frequency? Locking our radios to GPS references**
- **Beyond Foundation – the next step (Ron Bertrand VK2DQ) aimed at Foundation licensees**

The WIA Annual General Meeting will be held at Monash University Gippsland Campus, Churchill, Victoria Tours of local attractions will be arranged – more news soon.

Complete details will soon be available on the WIA website. Alternatively, register your request for an information pack with the WIA office.

Silent keys

Peter Page VK2APP

With the passing of Peter Page VK2APP, our hobby has lost not only one of its longest licensed amateurs, but one of its most enthusiastic members. Peter had many regular contacts on air and always had an excellent signal. His operating style was of such a high standard that we could all benefit by emulating him. Peter was licensed soon after the end of the second world war, perhaps 60 years ago and had been on most bands ever since.

He was born on his family property 'Stoneridge' at Young in southern NSW 81 years ago. He had lived there until a few years ago when he moved into the town of Young. His son Richard has since taken on the management of 'Stoneridge'.

Most of those who had contacts with Peter would not be aware that he did not have the benefit of his eyesight. Peter was born with infantile glaucoma and in the last 40 years had been completely blind. Despite his disability, he managed his large grazing and farming property with great skill and efficiency and found time to serve for a good many years on Young Shire Council. He represented that council on the electricity distribution authority and was its chair for some years.

In days gone by, Peter was an avid home brewer. He made all his own equipment in the days of 807s and carbon microphones and he maintained his technical interest and knowledge to the end. To our knowledge during the last two years he completed a screwdriver mobile antenna, complete with lathe turned thread for the coil (all his own work), at least one power supply and finally the complete restoration of an old oil engine. His 18.3 metre (60 foot) tower containing the TH6DXX was another engineering marvel being completely designed by him so that he could lower and raise it within 10 to 15 minutes of work. His excellent HF signal was testament to his design and installation work. He was greatly assisted in acquiring information, reading circuits and checking equipment by his wife Chris to whom he was married for 46 years.



Peter was always interested in the day to day running of amateur radio and was once a member of the Federal Executive of the original WIA and always took a great interest in VK2 Division matters, often attending meetings in Sydney. He was a member of several radio clubs, including the South West Zone of the WIA, NSW Division, later South West Amateur Radio Society, Mid South Coast, Parkes and Goulburn radio clubs.

Our deepest sympathies are offered to Chris and children Richard and Penny and their respective families. Their loss is great but a great many amateurs will miss Peter as well.

Vale Peter VK2APP SK.

Submitted by David Thompson VK2BDT and John Eyles VK2YW.

Francis Michael (Mick) Barrow Paget VK6FP

It is with regret we record the passing of Mick VK6FP on Dec 6, 2008. He was 87.

Mick had a very full life. He served for over five years with the Army including the Middle East, he was one of the Rats of Tobruk, and saw further action in New Guinea and Borneo before finally being discharged from active service.

He was qualified as a stationary diesel engine driver, and tried a few other occupations before spending 26 years as a Radio & TV Technician with Telecom.

In his retirement he devoted himself to his hobbies of amateur radio, computing, shooting with pistol, rifle and muzzle loaders, wine making and machining on both wood and metal lathes.

Mick used to worry over the demise of his hobby of amateur radio. When he knew his time to operate AR was coming to an end, he sold some of his equipment and gave the remaining gear to another amateur friend who is now assisting a young group interested in the hobby. The family knows Mick would be delighted that his gear is being well used.

Mick succumbed to dementia in the last two years. He is terribly missed by his wife Jean, four children and extended family.

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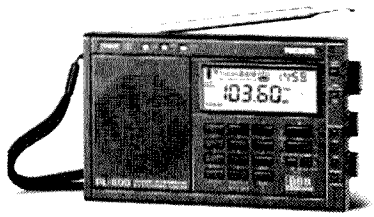
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We are looking for writers of articles suitable for this website.

The Intention is that it will become an online encyclopaedia for hams.

Please log into the site, register and start writing!

Tim Roberts VK4YEH QTHR.

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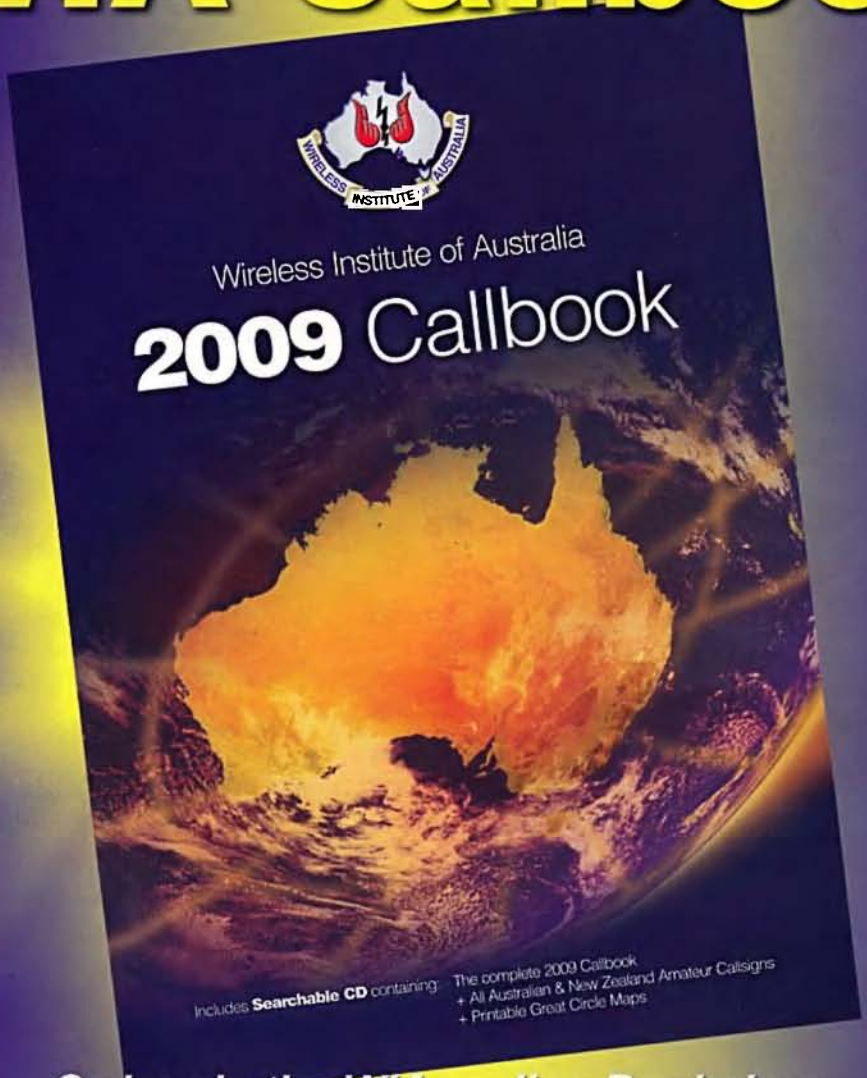
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VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
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VK7	VK7WI:	Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

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Amateur Radio

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Our Cover this month

Joe VK7JG with a high power LED optical transmitter during tests of over the horizon optical communications. Fog had started to envelop the site. See the detailed story in this issue on page 22.
Photo by Alvin de Quincey VK7NDQ.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

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Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

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When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

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Editorial

Peter Freeman VK3KAI

Recovery

Following the fires and floods of February, many communities are starting to move into the various phases of recovery. Parts of Queensland are starting to dry out and are probably looking forward to the end of the wet season. I think most would also be aware of the task ahead in southern Queensland following the oil spill from a large cargo vessel.

In Victoria, the clean up of sites impacted by fires has begun and news is circulating of how the large sum raised by the appeals will begin to be distributed. Individuals are starting on the tasks required to start to return to normality – the steps may be the construction of new fencing, or the long road of planning the construction of a new house to replace the home lost to the fires.

This issue of AR carries some stories of the involvement of amateurs during the fires. Not all the individuals will be identified, but entire communities ultimately owe a great deal to all who volunteered and worked during the emergency, regardless of the agency, amateur or otherwise.

Contests

We all offer our congratulations to those who did well in the Ross Hull and Summer Field Day contests.

The results appear elsewhere in this issue. They show something very important, especially in the case of the Ross Hull Contest – you cannot win if you do not submit an entry! An event such as the Ross Hull presents many challenges, not the least of which is that it ran for an entire month this year.

The overall winner will tell all that his score came about from being in the radio shack only when it was possible – Robbie runs his own very active business, so he was not sitting in the shack for days on end just waiting for propagation to bring a new contact. Congratulations Rob.

As this issue is being prepared, the John Moyle Memorial National Field Day is fast approaching.

Unfortunately, the weather is looking as if it will not be kind for those out on hilltops in south-eastern parts of the country. In my view, all who participated should submit their log to the Contest Manager, even if they consider that they have no chance of winning.

It is not the winning that is important, especially in this contest; it is the preparation and participation. Everyone who operated portable deserves recognition of their efforts. Part of that recognition comes from your log score being listed in the final results.

More hard work

Many will be aware that the staff at the WIA office have been working extra hard in the last month, especially because of the introduction of the new system regarding the issuing of callsigns and Certificates of Proficiency.

Some further discussions arising from the consideration of these tasks appear in News and Comment in this issue. It looks as if the office and Board team has more work still to come.

Much work has been occurring to prepare for the WIA Annual General Meeting and the GippsTech – Special Event weekend of activities to occur in Churchill on the first weekend of May.

I do look forward to catching up with many of you who attend – hopefully perhaps most. As the key organiser of the GippsTech components of the weekend, I am sure you can appreciate that I may be very busy at times!

Finally, remember that the traditional GippsTech event is scheduled for the weekend of 11 and 12 July!

73 Peter VK3KAI

Erratum

Author Ron Saunders VK2WB, informs us of this correction in "Matching Network Software" in the March AR:

On page 21, in the last 2 paragraphs in the first column all references to C2 should be C1. I mixed up the source and load ends of the network on the schematics. One program puts the source at left and the other puts it at right – I usually work left to right (source to load) in schematics.

On page 22 the reference to power calculation does not show the 2 as a squared value. Probably clear to most readers, but some may wonder how the values are obtained with the formula as shown.

The formula should therefore be:
$P = E^2/R = (70.7)^2/50 = 100$ W.
73 de Ron VK2WB

Michael Owen VK3KI

VK9 Callsigns

On 2nd March 2009 the WIA took over responsibility for "managing" amateur callsigns.

"Managing" means recommending the allocation of particular callsigns in accordance with certain rules, and details can be found on the WIA website.

Very soon after 2 March I became aware that VK9 callsigns were the subject of some discussion and concern. If the WIA had the role of recommending callsigns, we had better do our best to get it right.

But the more I asked questions, the less obvious the answers became. I find criticism of what has been done in the past. Looking at the VK9 list in the WIA Call Book I see no coherent application of policy. I find a current complaint "Can anyone advise why the new Expedition to Mellish is using a three letter callsign beginning with G?" It becomes obvious that while many people have strong opinions on the matter, there is no unanimity as to how VK9 callsigns should be managed.

So I decided to write this Comment to identify the issues as I saw them, and to invite comments with a view to formulating a policy that we could recommend to ACMA (Yes, "recommend", we are not the decision maker!).

Why is VK9 important? Because VK9 is allocated to the Australian External Territories and includes some highly sought after DX locations.

If we are looking for policy, we must ask "What does ACMA say about VK9 callsigns?"

There are two items that relate to VK9. One is included in the Amateur Callsign Structure, part of the Rules that govern the WIA, and is included in the material we publish on our website. That says:

"Amateur callsigns for Australian External Territories have the prefix VK9. In most cases, the first or second letter after VK9 (the fourth or fifth character of the callsign) is used to identify each Territory or area:

C = Cocos Island;
N = Norfolk Island;
W = World;
X = Christmas Island;
L = Lord Howe Island; and
M = Mellish Reef.

For example, VK9CA identifies that the station operates under an Advanced licence from Cocos Island, VK9NCA identifies that the station operates under a Standard licence from Cocos Island, and VK9FCAA identifies that the station operates under a Foundation licence from Cocos Island."

Now, note the "in most cases"! The "geographic indicator" may be the fourth or fifth character of the callsign. And what on earth "World" means is completely beyond me, but let us leave that on one side.

Looking at the list of VK9 callsigns in the Callbook makes it obvious that, whatever is said, over the years there has not been any consistency in the issue of VK9 callsigns.

So far as amateurs not resident in the External Territories are concerned, what is the need?

Anyone with a VK callsign can use their VK call "portable" in any Australian state or territory.

Any overseas amateur visiting Australia may for the first 90 days of the visit use his or her callsign under the Class Licence for Visiting Overseas Amateurs. The notes to the Class Licence say specifically "This Class Licence applies to Australian territories in the same way that it applies to mainland Australia".

But we must accept that, for the very reasons I have identified, some people will want a VK9 callsign. So, is there something special about VK9 callsigns so that they should be controlled differently from any other Australian callsign?

So, perhaps a first question becomes, do we want to preserve a geographic indicator?

If we want to preserve a geographic indicator, we could do it the way ACMA suggest, that is the first or second letter after the VK9 can be the geographic indicator.

But if we wanted to, we could make the geographic indicator the first letter after VK9. That would address some of the criticism I have heard. For example, the policy could become:

VK9CA to VK9CZ or VK9CAA to VK9CAZ. VK9CBA to VK9CBZ and so on identifies that the station operates under an Advanced licence from Cocos Island, VK9CHA to VK9CHZ, VK9CNAto VK9CNZ and so on identifies that the station operates under a Standard licence from Cocos Island, and VK9CFAA to VK9CFZZ identifies that the station operates under a Foundation licence from Cocos Island."

That does not do much for two letter calls!

But what about a person who wants a VK9 callsign to visit a series of territories? Perhaps for those people you can issue a callsign that does not fall into a block including the first letter after the VK9 that is a geographic indicator.

But does all of that become meaningless if anyone can use a VK9 call as portable anywhere in Australia?

To make a callsign with a geographic indicator meaningful, do you need to impose a condition on the licence that it may only be used in the Territory appropriate to the geographic indicator?

But can a geographic indicator ever become meaningful given the callsigns that have been issued in the past, and the fact that you cannot rewrite history?

But what about a VK9 callsign without a geographic indicator? Should we consider a condition of a licence that a VK9 call without a geographic indicator can only be used in the Australian External Territories and not elsewhere in Australia?

The problem with that is that a person resident in an External Territory with a VK9 callsign has a restriction imposed on him or her that is not imposed on anyone else.

The other ACMA policy relating to VK9 callsigns is to be found on the ACMA website under Callsigns, and this is a brief note that says:

"VK9 prefix callsigns are allocated to amateurs residing in or visiting Australia's External Territories, other than Antarctica. Licences with VK9

Continued next page

WIA News

New procedure and forms for Callsigns on the WIA website

From Monday 2 March 2009 ACMA has required a WIA Callsign Recommendation before issuing a new amateur station licence or changing the callsign of an existing licence, although this has not been necessary for people who successfully completed assessments before 2 March 2009 by WIA Assessors and requested the WIA to forward their applications for a station licence to ACMA.

From 2 March 2009 anyone has been able to search a Public List of Available Callsigns on the WIA website, which has been updated daily. This Public List allows those who wish to choose a callsign to see what callsigns are available.

The WIA has now placed on its website full information about how to obtain a Callsign Recommendation, information on the cost as well as the necessary forms which can be downloaded.

The details are on the WIA website, under the tab "Become a Radio Amateur", then "Callsigns and certificates".

The forms that can be downloaded include the form to be used in association with an amateur assessment conducted by a WIA Assessor. Details are also included of the special arrangements for two letter callsigns in Victoria, New South Wales and Queensland.

The WIA will not issue a callsign recommendation for any callsign until seven Working Days have elapsed from when it was first put on the Public List.

During that time, if something has gone wrong, it can be returned to its rightful owner. But someone must let the WIA office know there is a problem during those seven Working Days. So, amateurs are urged, if they see a callsign being listed as available and suspect there is a mistake, to let the person concerned know, and encourage him or her to immediately contact the WIA office.

The public list has been very popular with over 10,000 hits in the first two weeks and with positive feedback from amateurs saying that selecting a callsign is now much easier.

IARU appoints new President and Vice President

Tim Ellam VE6SH has been appointed International Amateur Radio Union (IARU) President for five years from 9 May 2009, with Ole Garpestad LA2RR as Vice President, following ratification of their nominations by the member societies of the IARU.

Tim comes from Calgary, Alberta, Canada and is partner in the Canadian law firm McCarthy Tetrault. He has been IARU Vice President for the last five years, replacing David Wardlaw VK3ADW in that position.

Ole is a telecom and radio engineer, and stepped down as President of IARU Region 1 to take this position.

Larry Price W4RA declined a further term as IARU President, after very many years with IARU.

Larry was IARU Vice President from 1983 to 1984, IARU Secretary from 1989 to 1999 and IARU President from 1999 to 2009. Larry has spent a great deal of time in Geneva, representing IARU at many different levels, and is greatly respected.

WIA issues Certificates of Proficiency

Since 2 February 2009 the WIA has been issuing Certificates of Proficiency pursuant to a delegation under the Radiocommunications Act and in accordance with the Deed between the Australian Communications and Media Authority (ACMA) and the WIA.

A very few successful candidates have not provided the necessary signed photograph and details on the Assessment Sheet completed at the time of their assessment. There is no additional fee for the issue of the Certificate of Proficiency and all candidates are urged to obtain their Certificate of Proficiency as soon as possible after successfully completing the assessment.

Further information on obtaining a Certificate of Proficiency can be found on the WIA website, under the tab "Become a Radio Amateur", then "Callsigns and Certificates".

The Certificate of Proficiency Application Form is at the end of the Guide to Certificates of Proficiency.

WIA AGM and Open Forum

Preparations have continued for the WIA Annual General Meeting and Open Forum on 2 May 2009 at the Monash University Gippsland Campus at Churchill and the weekend of exciting activities associated with the AGM.

Formal notice was included in the last issue of AR and has been posted to all members who do not receive AR.

Details of the GippsTech – Special Edition, a feature of the weekend, and the other activities can be found on the brochure included with this AR.

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WIA Comment continued

callsigns allocated to visiting amateurs will only be issued for the duration of their visit and will not be renewed."

When I look in the WIA Call Book under VK9 I see many VK9 callsigns held by people who seem to have visited Australia's External Territories and are not resident in VK9 but still hold their callsign.

Is there any reason to attempt to impose that restriction? Is ACMA entitled to impose that restriction?

Should that restriction be retained?

Is the simplest solution to treat VK9 callsigns no differently from other callsigns, and allow people to hold them as they hold any other callsign and not bother about attempting to include any geographic indicator, or restricting their issue or use beyond the restrictions on the use of all licences found in the LCD.

But what should be done? I have written this Comment to invite everyone who is interested to send their opinion to the WIA, so we can see if amateurs generally think there should be something special about the management of VK9 callsigns and if so, what should that be.

Send you opinions by mail or by facsimile to the WIA Office, or by email to secretary@wia.org.au in the next week or so.

Perhaps, with your help, I will not be quite as confused as I am now.

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A handy portable mast support

Anthony Rogers VK3JIA

Recently I had to tune a 28 MHz vertical antenna. Rather than climb on to the roof, continually raising and lowering the antenna each time, I came up with the idea that it would be better to mount the antenna at a lower height, for tuning purposes. Offered here is a simple yet practicable way of supporting the mast and antenna – as we all get a bit older (I am 41), the prospect of getting up on to the roof or tower to tune antennas can be undesirable, and unsafe.

My QTH has an almost flat roof, so I have an advantage. Its lowest point is about 2.7 metres; however at the front of the house it is close to 6 metres, and a fall from that height would not be good. Going up and down the ladder two or three times can be tiring and frustrating if the antenna turns out to be a real stinker to tune.

This system can be used almost anywhere, as a temporary support. I even had it in place for three weeks, and it still stayed put. However, this is not recommended.

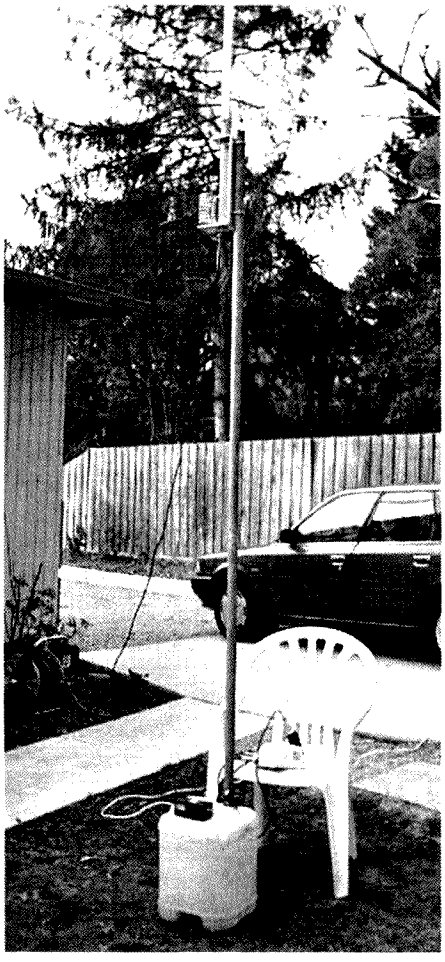


Photo 2: The plastic chair in place, allowing easy antenna tuning adjustments.

Equipment needed is one length of 40 mm OD pipe, one plastic garden chair, one 25 litre water container and 25 litres of water (or sand).

Fill the plastic container to the brim with water or sand, and then put the length of pipe in the top as shown in Photo 1.

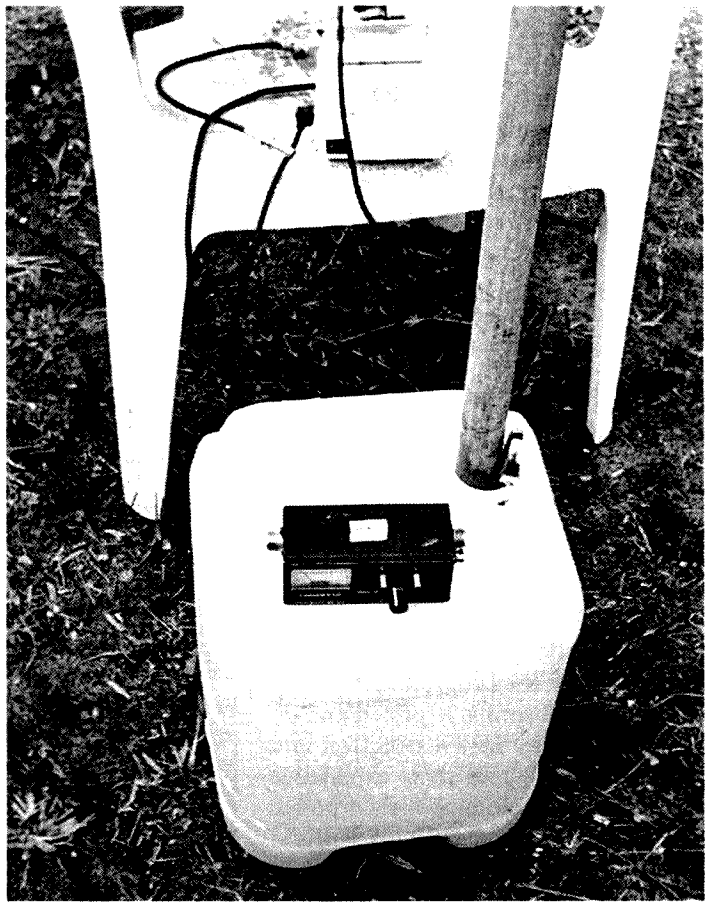


Photo 1: A close up of the pipe mast nicely 'jammed' in the container.

You will need to jam the pipe into the plastic container to stop it from moving about and unbalancing the system.

Place the garden chair near the pipe. Refer to Photo 2. It is then possible to stand on the chair and make the necessary tuning adjustments. Even in a small breeze no movement was observed.

When the antenna is tuned, the mast and antenna can be raised to its normal position. Some slight change in tuning may result. I have found here that tuning the antenna slightly too long results in the SWR reducing when in the final position.

Here is a safe, quick and reliable method for temporary antenna erection when carrying out preliminary tuning. When not in use the items can be stored neatly in the garage for next time. There is also no reason why this could not be used portable or on field days. In this instance sand would probably be better, and some additional sand for use in guying would keep the public liability legal eagles happy!

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A manual controller for microwave step attenuators

Mike O'Ryan VK4YNQ

Are you looking for something better than the standard homebrew slide-switch type step attenuators often found in amateur workshops? Presented here is a simple CMOS based logic circuit for use with the professional, high quality HP3332X or HP894X series microwave latched step RF attenuators. The circuit draws very little power, has a low RF signature and allows flexibility in construction.

1. Background

While discussing various RF projects with fellow amateur radio enthusiasts, a general theme often drifts into the conversation concerning RF attenuators. "I have just bought a Digital Signal Generator Kit from Mini-Kits (VK5EME) and would really like to put a good 70 dB attenuator on its output. Got this beaut little case to put it in, but not much front panel space to put much else onto it though"; or " I need a reliable 50 to 70 dB RF attenuator in 'L' band and have a few programmable ones in the junk box but I cannot find a circuit to drive them".

Many amateurs stay with manually operated, tubular step attenuators because they are relatively easy to install where front panel space allows this. Costs vary from between AUD$70 to $250 for 4 GHz units, increasing to AUD$400 to $500 for 18 GHz units, and higher for 26 GHz devices. Programmable step attenuators are similarly priced and do allow flexibility in construction and layout, but do require some experience in software programming to incorporate into your own designs.

The subject of RF step attenuators also arose with Peter VK5ZPG when discussing the design for an instrumentation up-converter using his HP8922S operating as a spectrum analyser. In Peter's case, he already had on hand suitable programmable step attenuators, the HP33321SC (see Figure 1), ratted from a HP83220E mobile telephone test set (which was of no use to him) that accompanied a HP8922S GSM Test Set. For most of us however, obtaining good attenuators is a careful balance between a project need and available funds for purchasing either manual or the more costly programmable step attenuators. As amateur radio experimentation goes higher into the microwave GHz frequency bands, the need to buy microwave step attenuators becomes more important for output reliability and mismatch loss reasons in home built test equipment. For operations below 4GHz, the HP3332X (see Figure 1) series attenuator are at the cheaper end of the scale (USD$50 to $150 on eBay, plus postage) and an excellent alternative compared to constructing one from discrete components. When buying these units second hand or off eBay, always check with the seller that the unit has been tested and is fully functional before buying.



Figure 1: HP33321SC microwave attenuator with in-line ribbon header.

Whilst home-made step attenuators using the tried and trusted method of using slide switches and 1% carbon resistors are fine up to around 60 MHz, their performance at higher frequencies becomes lumpy and unreliable. Since

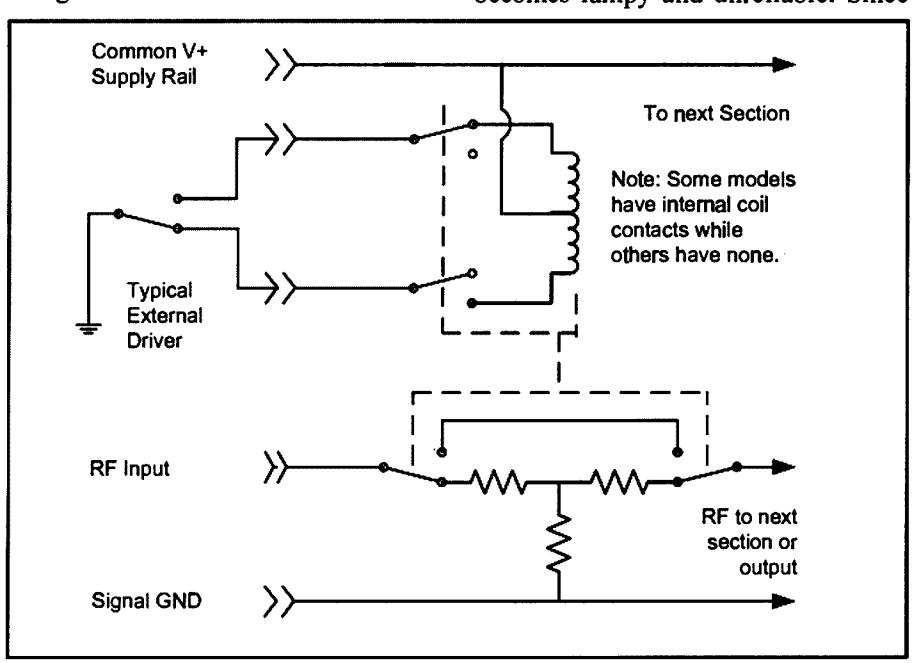


Figure 2: An attenuator section electrical diagram.

Peter needed reliable operations to 1 GHz for his up-converter, the focus remained with commercially made microwave attenuators.

So the challenge was to design a programmable RF step attenuator controller board that encompassed the following concepts:

- A simple CMOS logic circuit that's easily de-bugged;
- No microprocessors;
- Have a minimum of three attenuator driver channels to cope with the common 70 dB range needs;
- Ability to easily expand the range by cascading two units to a four to six channel arrangement to get 140 dB attenuator range; and
- A simple multi-position front panel selector switch(s) to 'dial up' the RF attenuation needed.

Programmable attenuators – Agilent models

The most commonly available programmable attenuators on the second hand market are made by Agilent (formally known as Hewlett Packard). A summary of the HP849X attenuators is shown in Table 1. They are aimed at the benchtop service environment. A pair of HP 8494/5/6/7 attenuators can be connected in series with a HP 11716A interconnect kit which contains a rigid RF cable, mounting bracket, and necessary hardware to connect any pair of HP 8494/5/6/7 attenuators in series. The HP3332X attenuators in Table 2 are aimed at being embedded inside test equipment and may also be cascaded if desired.

These 'programmable attenuators' use miniature drive solenoids that have a switching time of about 20 milliseconds. Once switched, strong permanent magnets hold the solenoids (and attenuation value) in place – that is, they are bi-stable or 'latched'. A typical HP89XX and HP3332X series solenoid cell drive is shown in Figure 2 (see Reference 1). Using this simple type of drive however requires a power supply with high current capacity. If four solenoids are active, then 12 W of heat is being dissipated in the attenuator housing without any benefit or need. An intelligent pulsed solenoid drive is therefore needed with the latched solenoids.

Programming of the HP849X attenuators is done through a 12-pin Viking socket which can be rather difficult to obtain in small quantities, or an optional ribbon cable with DIP plugs. Programming of the HP3332X attenuators is done with a ribbon cable with either an in-line header plug or DIP plug which makes them more suitable for embedded home construction. Having a simple in-line header on a PCB would be the easiest connection method for any attenuator selected.

2. Design description

2.1 General

The attenuator controller board (ACB) circuit is designed as a fixed state machine with everything running off a fixed astable clock operating at an approximate 10 Hz rate. The ACB (Figure 3) is functionally divided into the following sections:

- Clock and power-on reset;
- Input panel switch diode array;
- Input latches for three attenuator sections (channels);
- Bi-stable pulse generator for three attenuator sections (channels);
- Power supply.

The digital logic CMOS ICs chosen can all operate on any voltage between +5 V to +15 V.

2.2 Clock and Power ON reset

The circuit is designed as a fixed state machine with everything running off a fixed astable clock operating at approximately a 10 Hz rate. This is set by the inverter IC1B and the timing components R4 and C4. The clock is divided by two with IC3B and sets the input command line sampling rate of 5 Hz (that is, every 200 ms). The circuit is initialised when power is first applied by setting the internal command line latches high and thereby indicating maximum attenuation. This state is maintained while C10 charges up for approximately 0.6 second.

2.3 Input diode array

For attenuator step selection, a simple binary weighted diode array was selected as the most economical and adaptable approach for home construction. Nine diodes (D3 – D11) provide the binary coding for three channels. A single pole eight position switch is all that is required to dial up any 10 dB step between 0 to 70 dB, by simply grounding one of the seven diode array input lines.

The diode array output consists of three binary weighted lines that go to a configuration header and can also be used for expansion to other boards if needed. The jumper settings are normally 1-2, 3-4, 5-6 for standard binary coding as used in the HP849X and HP3332X attenuators. Attenuators that do not follow the sequential binary weighting, such as the HP3332SG 35 dB attenuator, will need a different configuration setting (1-4, 3-6, 5-2 in this case).

The three binary weighted lines are filtered with 10 ms RC networks and squared up with Schmidt trigger gates (IC1D, E, F).

2.4 Command line latches

The state of the three input channel command lines are periodically sampled by first latching their states with three D-flip-flops (IC2A, B and IC3A) and then the inputs are processed by the following pulse coding stage before the next sampling.

2.5 Pulse coding stage

Each of the three pulse coding stages consists of two D-flip-flops and two AND gates. There are two bistable output lines from each stage and only one of the two output lines is momentarily pulsed when an input command line state change has been detected. For example, when the D-input on IC4A goes from low to high state, a solenoid ON pulse is generated at IC7B for one clock period (that is, 100 ms). No further solenoid pulses are generated if the command line remains high. When the input command line to D-input pin of IC4A goes from high to low however, a solenoid OFF pulse is generated at IC7A for one clock period. No further solenoid pulses are generated if the command line remains low.

2.6 Solenoid drivers

Each of the bi-stable outputs drives an open collector BC337 switching transistor (Q1 to Q6). All solenoid commons are attached to the +ve supply rail and the switching transistors pull the selected solenoid 'half' (ON or OFF) to ground momentarily. Diodes D12 to D17 clamp the inductive solenoid switching spikes to the +ve rail supply. Transistor base resistors R9 to R14 allow operation with a +15 V rail and switching currents of 200 mA. Should a +5 V DC rail be

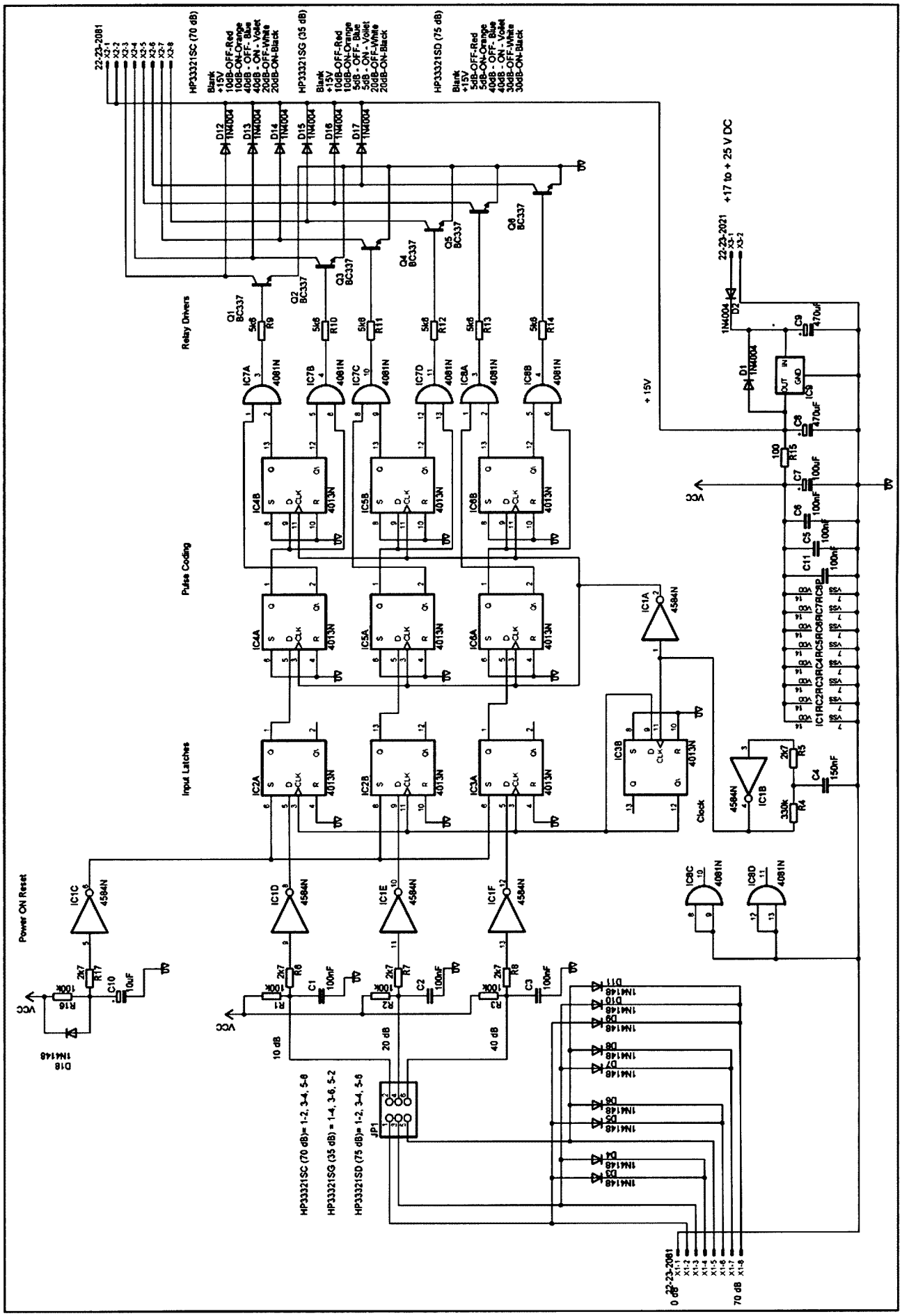


Figure 3: Schematic of attenuator control board.

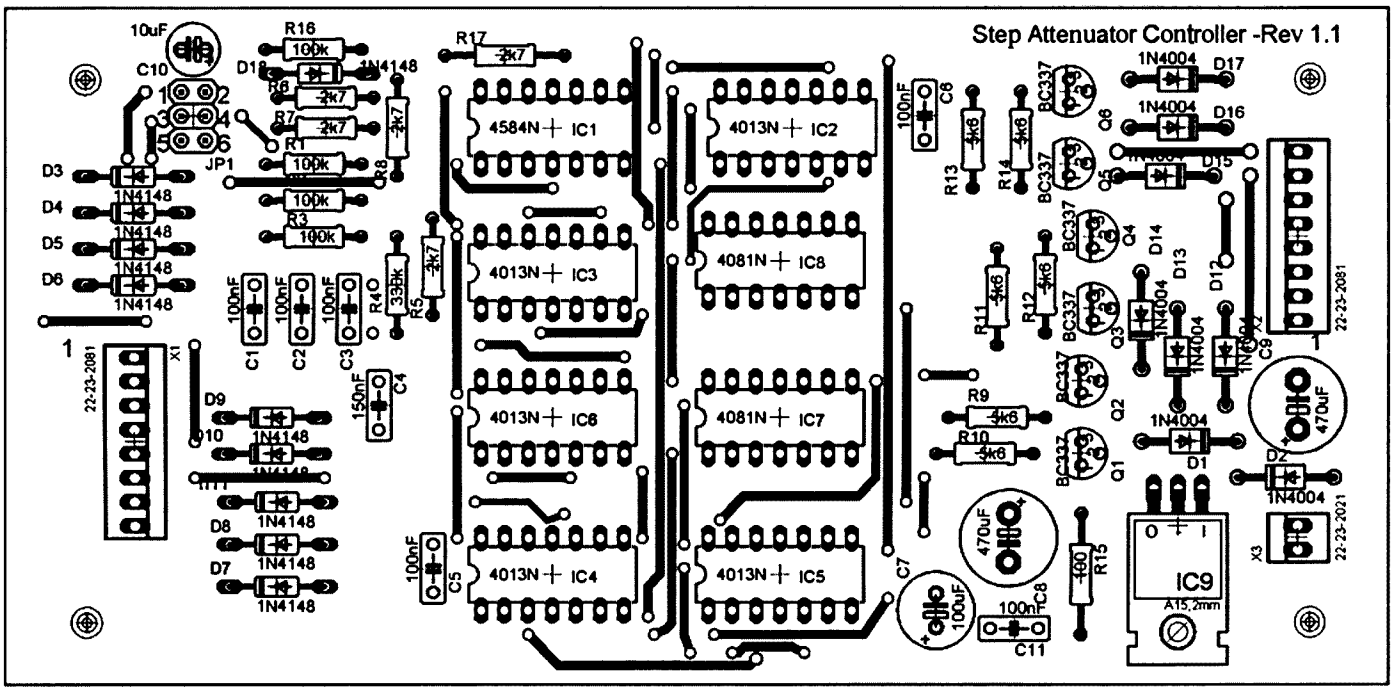


Figure 4: Top overlay showing components and wire jumpers.

needed for some attenuator versions, then change R9 to R14 to 1k2 for +5 V operation as this provides an increased 300 mA switching current needed for these attenuator solenoids.

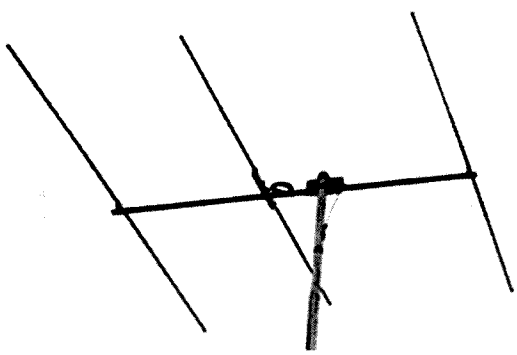
2.7 Power supply

An input power supply may be in the range of +7 V to +25 V DC depending on the rail voltage needed and for a regulated +15 V DC rail, then the minimum input supply voltage is +17 V. An on board three terminal regulator, which in this case is a LM7815 (IC9) provides the +15 V DC. The rail voltage may be changed to a lower voltage if

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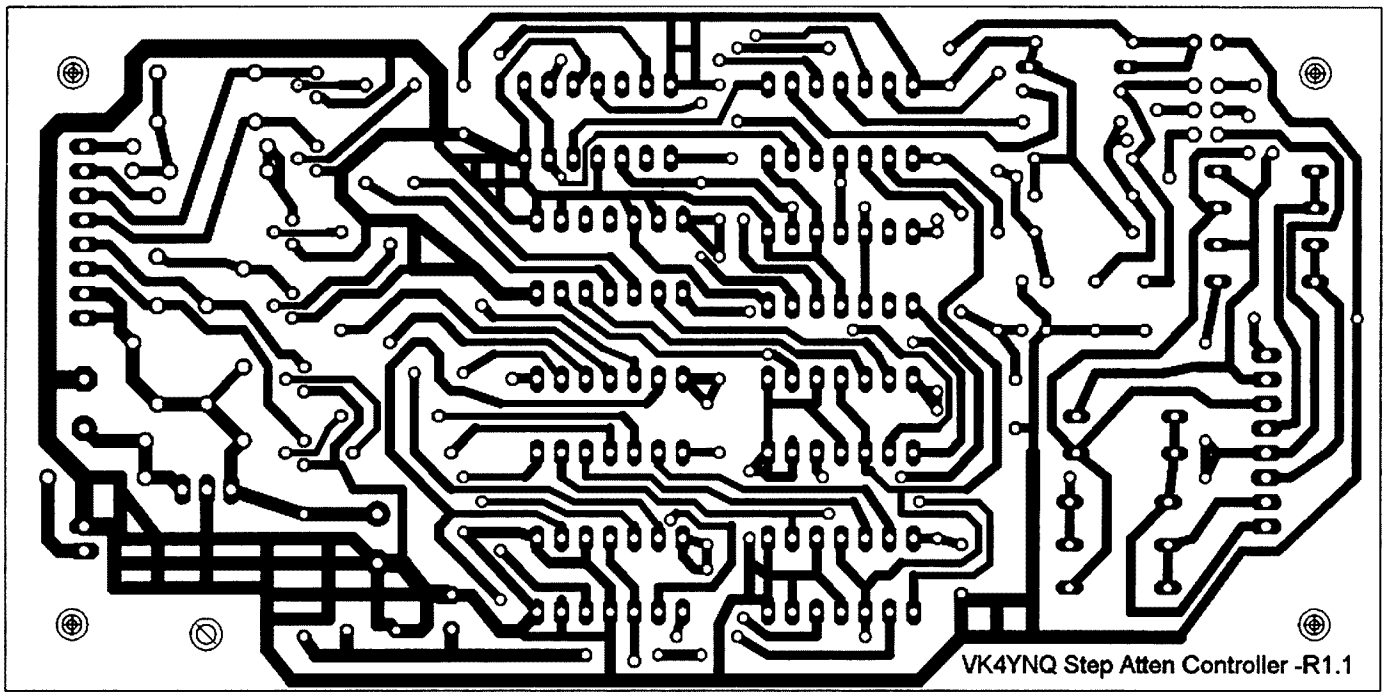


Figure 5: PCB copper track side.

required by the step attenuator rating, for example a +5 VDC rail, by changing the terminal regulator to a LM7805 regulator, and transistor base resistors R9 to R14 changed in value.

Idle current consumption is very small at 4 mA. Solenoid current depends on the versions obtained; the +24 V version draws 125 mA, the +15 V version draws 200 mA, and the +5 V versions draw 300 mA per solenoid. Using the +15 V case, when solenoid activation occurs, the current jumps to 200 mA per solenoid for 100 ms (or 600 mA if all three are activated within 200 ms sampling period, or 900 mA if using the 5 V solenoid versions), then drops back to an idle current of 4 mA. The low duty cycle also allows the regulator to be mounted flat on the PCB without any heatsink required.

Surge currents for the solenoids are provided with electrolytic caps C9 and C8. The supply line to the logic circuits is decoupled from the solenoid rail via the series 100 ohm R15 and the 100 uF C7 to provide a stable rail.

The power supply is protected from accidental reverse polarity connection by the series diode D2.

HP849X Attenuator Summary

	Step size	Attenuation	4 GHz	18 GHz	26.5 GHz	Sections (dB)
Manual	1 dB	0 to 11 dB	8494A	8494B		1,2,4,4
	10 dB	0 to 70 dB	8495A	8495B	8495D	10,20,40 (A,B) 10,20,20,20 (D)
		0 to 110 dB	8496A	8496B		10,20,40,40
Programmable	1 dB	0 to 11 dB	8494G	8494H		1,2,4,4
	10 dB	0 to 70 dB	8495G	8495H	8495K	10,20,40 (G,H) 10,20,20,20 (K)
		0 to 90 dB			8497K	10,20,20,20
		0 to 110 dB	8496G	8496H		10,20,40,40

Table 1: HP849X attenuator summary.

3.0 Construction

A single layer PCB was designed with dimensions 71 x 143 mm to allow easy copper track transfers to standard copper PCB blanks that are available from Jaycar and Dick Smith (75 x 150 mm stock items). See Figures 4 and 5.

Although 'ugly' and 'paddy-board' methods of construction, using either PCB blanks or 'vero board' were considered, the complexity of inter-IC wiring could make for confusion, so a PCB design was settled on as being easiest in the long run. The schematic capture and PCB program used was Eagle PCB Software from CadSoft.

An easy method to produce the PCBs is with a resist transfer method available from Jaycar 'Press and Peel' film (Cat HG-9980). The image is printed onto the transfer paper with a laser printer and then ironed onto a cleanly scrubbed copper blank. The film is then peeled off the PCB and the board is then etched in ammonium persulphate solution (Cat NC-4254) or alternatively ferric chloride solution available from Dick Smith outlets. PCB holes are drilled as needed. (PCB track layout images are available from the author.)

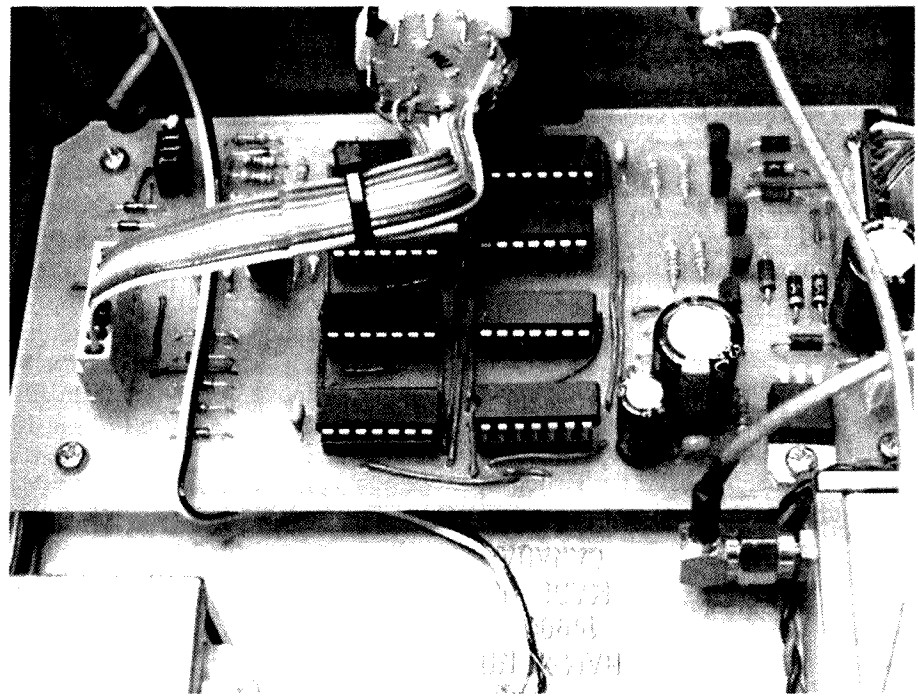


Figure 6: Photo of the assembled attenuator control board.

All compon-ents, except the CMOS ICs, are installed onto the board. IC sockets are recommended for fitting

HP3332X Attenuator Summary

	Step size	Attenuation	4 GHz	18 GHz	26.5 GHz	Sections (dB) (in sequence)
Manual	1 dB	0 to 11 dB	33320A	33320B		1,2,4,4
	10 dB	0 to 70 dB	33321A	33321B	33321D	10,20,40 (A,B) 10,20,20,20 (D)
		0 to 110 dB	33322A	33322B		10,20,40,40
Programmable	1 dB	0 to 11 dB	33320G	33320H		1,2,4,4
	5 dB	0 to 35 dB	33321SG			10,5, 20
		0 to 75 dB	33321SD			5,40,30
	10 dB	0 to 70 dB	33321G	33321H	33321K	10,20,40 (G,H) 10,20,20,20 (K)
		0 to 70 dB	33321SC			10,40, 20
		0 to 90 dB			33323K	10,20,20,20
		0 to 110 dB	33322G	33322H		10,20,40,40

Table 2: HP3332X attenuator summary.

the 14 pin DIL ICs for ease in repairs if needed. Install all top side wire links and check wiring thoroughly.

Using an ohmmeter, check continuity is present on all ICs Pin 7 to power supply ground on X3. Apply power and check the positive rail voltages are present (+15 V +/- 0.6 V for LM7815 as IC9) on pin 14 of all logic ICs. Now turn power off, discharge the supply caps by shorting C7, and then install the CMOS DIP ICs.

Connect XI header via ribbon cable to the rotary single pole, eight position switch. The single pole lug is wired to X2-pin 1 ground. Leave the switch in the '0 dB' position and not grounding any of the diode array input lines. Install the appropriate configuration jumpers in JP1 to suit the attenuator at hand. A photo of an assembled board is shown in Figure 6 and part of the RF attenuator with its SMA connectors is seen at the bottom right of the picture. Bulkhead RF connectors should use 360 degree crimp connections for cable shields.

4.0 Testing

Check the oscillator is running at approximately a 10 Hz rate with an oscilloscope or frequency meter on IC1A pin 2 and at a 5 Hz rate on IC3B pin 12.

Now check each command channel individually. This can be done with an oscilloscope placed on the AND gate outputs, or you can construct a small resistor LED array to visually monitor the outputs directly on the X2 header.

To construct the LED array, use six sets of a 1k5, ¼ watt resistor in series with a LED. Tie all six LED anodes together and wire to the 8 pin cable header for X2 Pin 2 which is the +15 V supply line. Then wire the individual LED resistors to X2 Header pins 3 to 8 as follows (the colours are those for the HP33321SC 70 dB attenuator ribbon harness):

X2-Pin1 and Pin 2 = +V rail = ***Brown***

X2-Pin 3 = Binary 1 OFF = 10 dB OFF = ***Red***

X2-Pin 4 = Binary 1 ON = 10 dB ON = ***Orange***

X2-Pin 5 = Binary 4 OFF = 40 dB OFF = ***Blue***

X2-Pin 6 = Binary 4 ON = 40 dB ON = ***Violet***

X2-Pin 7 = Binary 2 OFF = 20 dB OFF = ***White***

X2-Pin 8 = Binary 2 ON = 20 dB ON = ***Black***

The LEDS provide a clear visual indication of functionality during the set up tests.

Apply a ground on JP1 pin 2 and this should cause IC7-pin 4 (and X2-Pin 4) to pulse. Remove the ground from JP1 Pin 2 and this should cause IC7-pin 3 (and X2-Pin 3) to pulse.

Apply a ground on JP1 pin 4 and this should cause IC7-pin 11 (and X2-Pin 8) to pulse. Remove the ground from JP1 Pin 4 and this should cause IC7-pin 10 (and X2-Pin 7) to pulse.

Apply a ground on JP1 pin 6 and this should cause IC8-pin 4 (and X2-Pin 4) to pulse. Remove the ground from JP1 Pin 2 and this should cause IC8-pin 3 (and X2-Pin 3) to pulse.

Test the reset circuit by turning power off and setting the rotary switch to '0 dB attenuation'. Apply power and confirm that the three OFF LEDs light for approximately 0.6 seconds and then the three ON LEDs should pulse on for 0.1 second then turn off.

Check the RF attenuator is functioning correctly as well by applying power to the individual solenoid(s) and checking the RF attenuation with a signal generator and power meter or spectrum analyser if available.

Finally connect the RF attenuator cable header to the X2 PCB plug pins and do a final check on RF attenuation selection and the rotary switch. With this now completed, spray the copper track side with PCB lacquer to prevent track oxidisation and to provide long term humidity protection.

The programmable attenuator and its controller board are ready for installation into that all important radio or test equipment project.

Parts list

Part	Value	Device
C1-3,56,11	100 nF	MKT or ceramic 50 VW
C7	100 uF	Electro RB 25V
C8,9	470 uF	Electro RB 25V
C10	10 uF	Electro RB 25V
D1,2,12-18	1N4004	1 A diode
D3-11,18	1N4148	Signal diode
IC1	4584N	or CD40106 Hex Schmidt Inverter
IC2-6	4013N	Dual D Flip/Flop
IC7, 8	4081N	Quad AND
IC9	LM7815	Voltage Regulator
JP1	DIL Strip	Optional; 2X3 (Jaycar HM-3250, part)
Q1-6	BC337	Switching NPN transistor
R1-3, 16	100k	
R4	330k	
R5-8, 17	2k7	
R9-14	5k6	
R15	100	
X1, 2	8 Pin	Molex PCB Male (Jaycar HM-3418)
X3	2 pin	Molex PCB Male (Jaycar HM-3412)
X1, 2	8 Pin	Molex Cable Header (Jaycar HM-3408)
X3	2 pin	Molex Cable Header (Jaycar HM-3402)
misc	Switch	Rotary 1P8P switch
misc	4 * PCB standoffs	
misc	Ribbon cable	
misc	Nuts and bolts	
Test LED Array		
6 * 1k5		
6 * LED		
1		8 Pin Molex Cable Header (Jaycar HM-3408)

5.0 Conclusion

Within a couple of days of receiving my design, Peter VK5ZPG had the first PCB up and running with a HP33321SC attenuator (0 to 70 dB in 10 dB steps) which he used in my previously designed spectrum analyser up-converter.

Soon afterwards, he built a second board, using another attenuator for general test equipment bench use. I would like to thank Peter for assistance in reviewing this article, for his construction tips and the photographs of the operating controller board.

The manual step attenuator controller board (ACB) described in this article enables amateurs to use professional quality, programmable RF step attenuators for use in their own projects operating from DC to microwave frequencies.

The simple CMOS design uses readily available parts, does not require a microprocessor for functionality, has a low RF signature and can be used with most OEM RF attenuator assemblies.

6.0 Components and References

The parts list for the attenuator controller and sourcing of common parts listed are provided on previous page.

Suppliers are listed as follows:

- eBay USA:
  Electrical & Test Equipment Section
- RFPlus: RF Attenuators.
  Email: joniwright@gmail.com
  Internet: http://rfplus.jonwright.org/
- Jaycar: CMOS ICs, metal film resistors, capacitors, regulator ICs, PCB material and Track transfer products. http://www.jaycar.com.au
- Altronics: As above:
  http://www.altronics.com.au

References

1. Agilent Doc No. 5959-7857; Technical Data Sheet for HP33320, 33321, 33322 and 33323 OEM Step Attenuators
2. Agilent Doc. No. 08495-90025; 8494/95/96G/H Attenuators Operating and Service Manual

Author

Mike O'Ryan VK4YNQ may be contacted via email mikeo24j@bigpond.net.au for clarifications. Copies of the PCB schematic and track file images may also be obtained directly from the author via email request.

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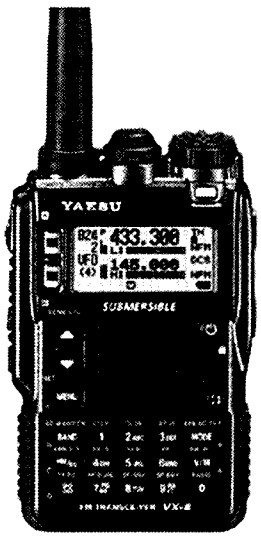
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A simple solution to an expensive problem

John Sutcliffe VK3TCT

I recently ran into some LDF 4 Heliax cable, and was about to put up a TET-EMTRON beam and several VHF Yagis, so I went about looking for connectors to attach to the cable to use as the main feeders on two runs of about 18 metres.

N type connectors were preferred as they are of constant impedance and waterproof, so I began searching the Internet for such connectors and was shocked to find that they cost around 35 dollars each and, as I wanted four for this project, this would have meant a total of $140 plus freight.

Apparently these connectors are available second hand from time to time at hamfests for around $10 each. However this presented several problems as I live in Mildura and getting to hamfests is both time consuming and costly and I wanted to use this coax as soon as possible.

The next best solution was to use some other method and I considered using copper tube attached to standard N connectors to adapt the cable to same. There were several problems here in that the connection needed to be robust as the fly leads from the mast/rotator would be attached, and the centre conductor on the Heliax is far bigger than usually accepted by RG213 type plugs. I needed to do something else.

I purchased a couple of waterproof diecast boxes at the local electronics store and proceeded to fit the sockets as shown in Photo 1.

The boxes were a little big, but that and bigger was all the store had in stock. I figured I could make them work and my colleague John VK1CJ, whom I talk to every day on 40 metres, said to make the connections short and it should work fine.

The method was to drill and attach the sockets low into the boxes so I could bring the cables in on their base, and then clamp them securely into place. Each socket is held in place by four three millimetre (1/8 inch) bolts, with solder lugs under the nut on each socket.

On the N socket I ran four connections from the four corners of the socket back to the shield, keeping all connections short, the length of the active wire and connection to the socket pin is about 12 mm (1/2 inch).

The connection to the UHF connector for the HF bands is not so critical and I only have two ground connections. The unit was finished by clamping the cables securely to the base of the box and inserting a copper shield between both sockets, the shield being made from part of an old hot water service. To clean the copper just leave the copper plate in vinegar overnight.

As the diecast boxes are waterproof if attached through the holes provided, I have drilled and tapped the antenna mast and attached the box to the mast.

I shall finish off by covering all connections with neutral cure silicone when all cables are connected. The other end is under cover so that termination will not need any additional protection. I now have low loss Heliax connections at a reasonable cost.

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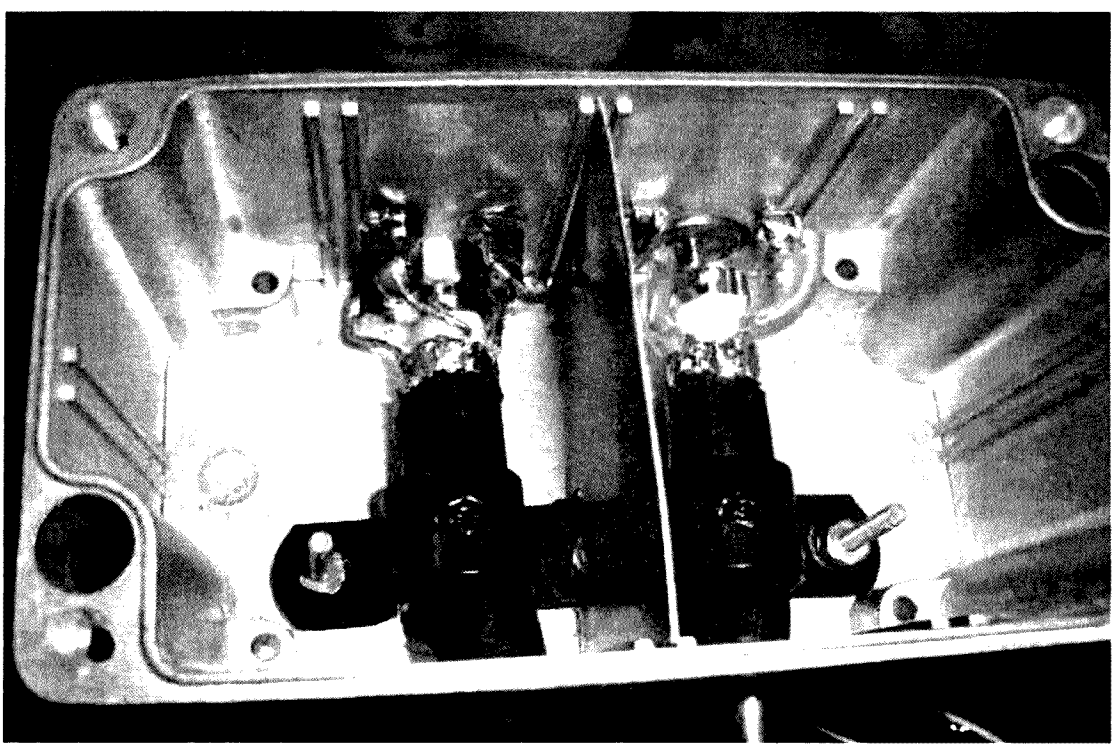


Photo 1: The termination box.

Charging around in the campervan

Richard Cortis VK2XRC

Last year my wife bought herself a little Toyota Hiace campervan which we have put to good use over the last year. However, we have suffered ongoing difficulties with the house battery. The campervan has two batteries, a normal starting battery as fitted by the manufacturer and another battery to run the refrigerator, cabin lights, water pump, amateur radio and those sorts of thing. The two batteries were connected together by a solenoid switch which came on when the ignition went on and disconnected when the ignition went off. There was a current limiting device (circuit breaker) between the house battery and the starting battery to reduce engine starting loads on the deep cycle house battery.

Our problem was that the house battery appeared to have a more significantly reduced discharge capacity than expected. The battery also had a much shorter service life.

We drove the campervan to Perth. Many thanks to those kind amateurs who run the various travellers' nets. In Perth I accidentally left the headlights on for half an hour and the engine would not start, so I replaced the starting battery before heading back to Sydney. However, half way across the Nullarbor Plain, the deep cycle house battery gave up the ghost and, at great expense, a new deep cycle house battery was installed in Port Augusta. After a few days, the performance of the house battery declined significantly. In Sydney, I was able to take a much closer look and discovered that both the starting battery supplied in Perth and the house battery installed in Port Augusta were calcium batteries, which are a much newer technology than the old flooded lead acid type.

I took advice from various parties and decided to deal with the simple and low cost matters first. I was told that there were occasional problems with fusible links and high resistance in cables from the alternator to the battery, so I replaced that cable. I also installed a new cable from the starting battery to the house battery. Because of the possibility of high resistance in the original ancient solenoid switch, I replaced that with a new solenoid switch capable of supplying a starting current if need be. Just in case. I upgraded the ground connection from both batteries.

However, none of these had any measurable effect. I even paid a fortune to an auto-electrician who told me that I did not have a charging problem.

Then I started to look more closely at the battery characteristics. A traditional flooded lead acid battery can be reasonably charged at about 13.8 volts. The batteries electrolyse less water and perform satisfactorily if they are run at about 13.5 volts. However, the newer technology calcium battery needed to be charged to at least 14.2 volts, I was told. If it was run at between 13.5 volts and 13.8 volts it would slowly discharge. If they do not get the higher voltage during charging, they develop only about half of the rated Amp Hour capacity. I was getting somewhere.

I then took to driving around with a multimeter connected to the battery so that I could observe charging voltages under normal operational circumstances. This turned out to be quite interesting. I observed that with all accessories, fan, air-conditioning and so on turned off, the battery would come up to 13.8 volts but that it required effort and perseverance. However, driving around with the air-conditioner on gave me 13.5 or 13.6 volts, depending on whether the clutch was in or out. When I turned on the headlights, the voltage went down to about 13.3 volts. At this stage, it became blatantly obvious that the problems with the house battery were related to insufficient charge voltage.

I made some enquiry with auto-electricians regarding upgrading the regulator or, heaven forbid, installing a new alternator. They were not at all keen to play with regulators. The suggestion was to replace the alternator and see what happened. However, at an expected cost "probably between $700 and $800" I was

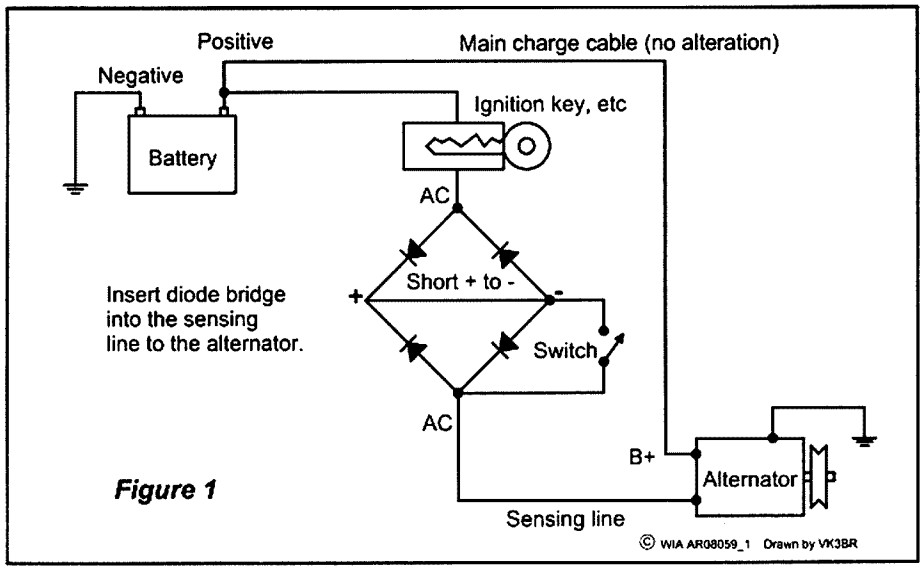


Figure 1: The circuit diagram of the automotive alternator booster.

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disinclined to proceed down that road especially as there was no guaranteed end result.

After this episode, I decided that I had to do something decisive for myself and that it was going to be a low cost approach. There did not appear to be anything physically wrong with the alternator except that the regulator voltage was set too low. I was most disinclined to remove the alternator from the vehicle because, being a diesel, the alternator has a vacuum pump which runs the power brakes and I did not want to risk disturbing that system. So there had to be another approach.

I recalled from other projects that I could use diodes to drop voltage. Perhaps, I thought, I could trick the regulator in the campervan into operating at a higher voltage. So I planned to insert a couple of diodes in the sensing wire from the battery to the alternator. The intent was to let the regulator see a lower voltage which would make it charge at a higher voltage to compensate. Ordinary silicon diodes have a voltage drop between about 0.5 volts and 0.7 volts. I went to my junk box and found a rectifier bridge which I guessed was good for about 15 amps. As the expected exciter current for the alternator was expected to be about 5 amps, I reckoned that the rectifier bridge would be satisfactory. The voltage drop across each of the diodes was about 0.55 volts. At full exciter current without the regulator cutting in and out, I expected to have to dissipate about ten to twelve watts.

Then I had another idea. Since we regularly run the house battery a fair way down, we need to bring it up fairly quickly if we are camping. My wife does not like the engine running in nice quiet camping places. So the idea was to wire the rectifier bridge so that there were two diodes in series in the sensing line.

I then put a switch across one of the diodes so that it could be shorted out, leaving just one diode in the sensing line. This gave me the ability to run the alternator at 13.8 to 14 volts under normal long distance driving conditions or, where necessary, to boost the voltage to 14.2 or a bit above under heavy charging conditions. The switch allows me to switch back to normal charging voltage after the battery has been charged.

There are a couple of points to consider when planning this sort of modification. Firstly, the type of alternator may determine whether you install the diodes in the sensing line or in the ground cable between the regulator and ground. Also, operation of the charge indicator light on the dash may need some current to flow in the opposite direction. The system is inductive so there may be transient currents in the opposite direction.

For these reasons it is desirable to install a second set of diodes in the opposite direction to avoid such problems. The diode bridge achieves this intent. Wire it up by shorting between the positive and negative terminals with a lead off to the switch. Connect another lead from one or other of the AC input terminals to the switch. Connect the diode system into the sensing line at the AC input terminals. You will see that there is the same voltage drop in each direction, switchable for about one volt or half a volt.

So I decided to have a go with the diodes. With a little bit of assistance from Tony VK2FREL, who is a mechanic, I removed the driver seat, removed the floor beneath the driver seat and exposed the alternator. Tony arrived, identified the sensing line and the diode was installed and running in about twenty minutes. Charging voltage came up and we could switch to normal charge or high charge. We had been successful.

Most of the components come out of stock, so I cannot say what it would have cost but my guess is that it would be under $20. Had I used this approach in the beginning, I would have saved a fair bit of time, effort and expense, but I would not have had the learning experience. I guess all this is just part of life.

And as a final note, take care when changing from old to new battery technology in old vehicles as the new technology batteries may not perform satisfactorily if the charge voltage is too low.

Checking charge voltage may be misleading if your battery has ceased to be reliable as it may not come up to voltage.

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Amateur Radio Wiki: *an introduction*

Tim Roberts VK4YEH

The purpose of this article is to acquaint readers with the Amateur Radio Wiki that has been advertised in AR over the last six months or so. It is written as a series of questions and answers, as it is likely that many readers probably do not really have a good idea what a wiki is or how to use one.

What is a wiki?

A wiki is one of a group of applications known as Web 2. Until recently, the internet was a collection of websites that users could browse to get specific information or services. Web 2 applications allow users to contribute to the development of the internet and in the case of a wiki, a website.

More information please!

Wikis are websites that focus on a specific audience, and contain information written, edited and monitored by the very people who use the website. Perhaps the best known wiki is Wikipedia, the online encyclopedia that has overtaken many of the traditional encyclopaedias in terms of popularity and the range of articles available to readers.

Why have a wiki?

It is simple really. By profession I am a teacher of mathematics, and my hobby is amateur radio. I am very much self-taught in electronics, so I look to experts to help me when I have a problem. My students are one step behind me as they do not have the experience that I have, so I and they look to experts to help them. A wiki allows experts to contribute to ham radio for the betterment of the hobby as well as to assist those who need help.

Who can contribute?

Anyone who is prepared to create a user name and password. Readers have unlimited access to the pages of a wiki. Writers must register. At the Amateur Radio Wiki we ask people to register because spammers and vandals have attempted to disrupt or destroy the site – registration gets rid of morons and ensures that the information is as accurate as possible.

Is the wiki only for VK hams?

Definitely not. Any ham who has information to add is invited - and encouraged - to do so.

Is my personal information kept secret?

Yes. The wiki does not ask for or collect personal information. Many members use fictitious names, and we are very happy when you do.

When I add some information can it be changed?

Yes. The whole idea of a wiki is that information can be added to, edited and

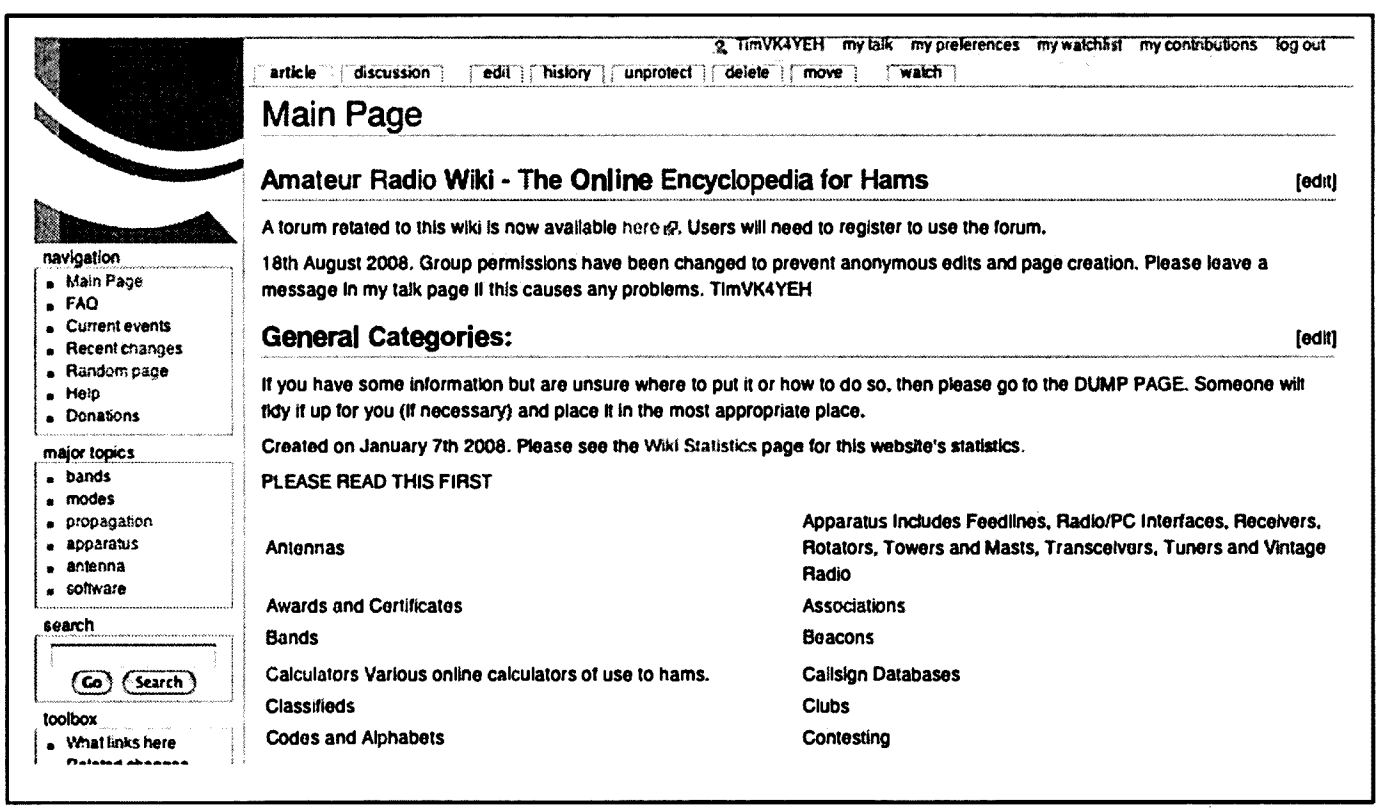


Figure 1: Amateur Radio Wiki home page.

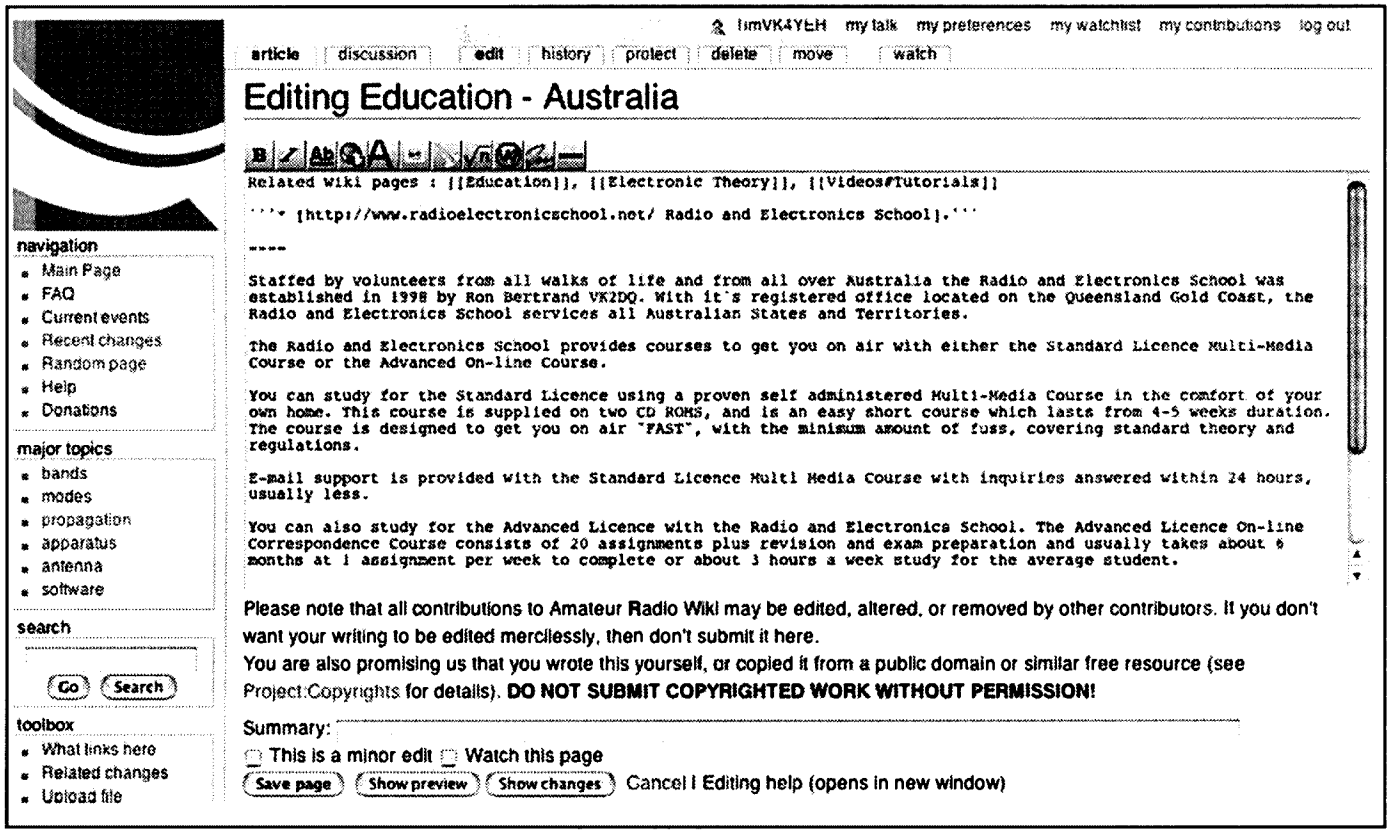


Figure 2: The Education – Australia Wiki edit page.

changed by someone who has additional information or perhaps knows more than the original contributor.

If someone changes the information that I have posted, can I change it back?

Yes. This does happen in wikipedia, but has not yet happened in the amateur radio wiki, probably due to the more factual nature of most of the pages.

Can I add diagrams and pictures to the wiki?

Yes. Once you have created a username and password, you can upload pictures, photos, scans and so on.

Who owns the information on the wiki?

One of the conditions of contributing to the wiki is that information must be released to the public domain. This means that writers lose any copyright control over their work.

Who owns the wiki?

At the moment I do. My vision is that eventually the administration of the wiki be taken over by a group dedicated to its success. Until that time I will continue to pay for hosting.

Has the wiki been successful?

The site has been accessed over 15,000 times since January last year, and has about 250 pages. A Google search for "Amateur Radio Wiki" places us third on page one of search results – so by these measures I would have to say yes.

OK, how does it work?

Follow these steps :

Log into
http://amateur-radio-wiki.net/index.php?title=Main_Page
or do a Google search for 'Amateur Radio Wiki' and go in from there. You should see a screen that looks something like Figure 1 (truncated for this article). Use the links on this home page to navigate through the site.

If you want to contribute, you will need to create a user name and password. These are kept secret from other users. You can find the login link in the top right corner of your screen.

Once you have found a page that you wish to add to, click on the edit button at the top of the page. You will be presented with a page containing Wiki Markup, which is the formatting code for the page, for example, the Education – Australia page edit looks like Figure 2.

Need help?

Click on the help link on the left of the page. The most commonly used markups can be found here: http://amateur-radio-wiki.net/index.php?title=Help:Contents

Completely lost?

Do not worry, help is not far away. If you would like to contribute but either cannot work out how to or would like someone else to do it for you, please email me at vk4yeh@gmail.com I will be very happy either to help you or to add your info for you.

Lastly I would like to thank the many VK hams who have already contributed to the wiki, and encourage anyone else who would like to do so, either by creating a login name or by sending info to me.

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Book Review

Ham Radio's Technical Culture

By Kristen Haring

Publisher: The MIT Press Cambridge, Massachusetts

Reviewer: Justin Giles-Clark VK7TW



Firstly thanks to Richard Rogers VK7RO for lending me the book. Kristen Haring holds degrees in mathematics and a doctorate in science history. Her style is insightful and very readable and there has been an enormous amount of research undertaken to put this work together. This is evident in the extensive notes and reference listing at the back of the book.

The book is a reasonably detailed cultural history of amateur radio in America from the 1920s through to the beginning of the 21st century. Ms Haring provides insightful analysis and comments about what she found from the literature reviews and meetings with amateurs around the US.

The first couple of chapters delve into the definition of a technical hobby and why ham radio is special among so many "technical" hobbies. Personal identification and created identities engaging with the technology in a way that was and is fun, collaborative, educational, intense and creative in a not-for-profit environment seems to be the answer.

Even from the 1920s there were strict behavioural expectations aligned with regulations. Identities from callsigns, jargon and many social club oriented aspects contributed to the hobby. Many of the traits seen in ham radio were clearly male-oriented, although there are examples where women were included. Up to WWII most equipment was home-built and following the war, it was mainly surplus which the American ham bought and modified. Certain companies, notably GE and RCA, encouraged hams with newsletters and separate product lines. There was a post-war explosion in the ham population and by the mid to late 1950s homebrewing was back in town along with the transistor. Heathkit and a range of other companies supplied kits bringing the primary focus back to the radio technology.

Chapter four looks at the dawning of the golden age of electronics in 1950s and 1960s where organisations actively recruited and encouraged ham radio operators. There was a re-alignment of occupation and leisure activities in the light of the Cold-War and space race technology boom. Jobs in the electronics industry exploded in the1950s seeing 40% of hams in the industry however this decreased to about 2% by the late 1960s. The amateur label provided a certain independence with more in depth practical knowledge and a motivation based solely on a devotion to radio inventiveness and exploratory goals. Another important aspect was the free exchange of information amongst hams, setting them apart from the commercial sector.

The McCarthy Cold War era even called into question ham radio by associating it with both communism and homosexuality and therefore upsetting political stability.

Chapter five takes an interesting look at ham radio in the US in the war years and the Cold War era. A reserve force of 5000 licensed amateur radio operators in a time of need was the ARRL catch-cry. This era also consolidated the ARRL's role of promotion, public relations and political lobbying. The Cold War saw the ARRL involved in the formation of the Radio Amateur Civil Emergency Service which provided some redundancy for professional communications systems and provided skilled civilian communicators. Ham radio's strength in this area is one of an open international communications service which was seen as dependable and strong.

Ham radio at home and the constant tension with family life is the basis of chapter six. The focus in the post-WWII era was on the technical skills the hobby provided along with the socially-sanctioned escape of the hobby. However, the McCarthy Cold War era even called into question ham radio by associating it with both communism and homosexuality and therefore upsetting political stability. Companies played on the tension at home in advertising and even awarded prizes to "the most understanding wife" in 1953. Marriage was the norm with hams and household budgets were usually stretched due to the hobby. The 1960s and 1970s women's liberation movement saw the apparent relaxing of women's attitudes to the hobby. Space for a shack was usually relegated to the basement or garage which became personal spaces reflecting a ham's broader interests. The ARRL called ham radio a democratic hobby which required careful and diplomatic management in the family setting.

Technological change from the introduction of integrated circuits causing the rise of consumer electronics moved hams from builders to purchasers along with the demise of the kit which

continued next page

Global Ham Spirit

I would like to share with you and your readers an example of true Ham Spirit spanning the Globe.

Just before Christmas my post office here in Canada lost a shipment of 67 QSL cards on the way to the ARRL DXCC desk. The parcel disappeared without a trace, a real nightmare.

It had taken over 20 years to collect these cards. Some of the cards were for contacts which are very rare and difficult to achieve here in my QTH close to the North Pole.

One of the real treasure cards lost was from VK0TS on Macquarie Island. Trying to find a link to replace the card it became obvious that the QSL information as per my old paper log was no longer valid.

After a long unsuccessful search on the internet I finally contacted Len, VK8DK QSL manager for the VK8 district, a link back to my own operations as VK8PW from Arnhem Land and South Goulburn Island. Len was very helpful and made a few phone calls for me locating Tex VK1TX. Tex searched his QSL box and miraculously found two blank QSL cards from VK0TS.

Tex was willing to send the card to me but needed confirmation that I actually had contacted VK0TS. Well the final breakthrough came via Neil VK6NE, Kevin VK2CE and Mike VK1MJ who directed me to Phil VK1DX.

Phil was in the possession of the electronic log of VK0TS, however had no QSL cards.

Phil quickly confirmed my QSO details via e-mail screenshot of the proper log page to VK1TX. Tex immediately mailed me the card. This all happened within just a few days thanks to the wonderful world of email and internet. Fortunately everyone involved had email access.

I am very grateful to the wonderful support provided by VK hams and would like to take this opportunity to say many thanks for all the help provided.

It has once again shown that ham spirit surely knows no borders.

73 and hope to catch you all on HF.

Peter VY0PW (Ex VK8PW, Ex VE8PW)

Praise from UK

An old friend VK5YO, visiting the UK from Australia, gave me a copy of *Amateur Radio* for August 2008. I just wanted to say what a wonderful read it has been too.

I enjoyed the articles in your magazine and in particular "A 5 Watt CW Tx" by VK3XU. What I found good about this was how the circuit diagram contained all the essential information e.g. active device pin outs, ferrite rod and toroid winding details, along with expected signal levels at various points in the project. The write up on construction and testing was a great read too.

As one who has spent 50+ years on the air and 30+ years teaching electronics, I thought this practical approach to a project deserved a little praise.

Roger Wheeler G3MGW

Amateur Radio and Sci Fi

Santa left me a very interesting book this year, called 'A Matter of Destiny', written by N.L. Williams.

No, it is not the solution to antennas and DX, but a mystery Sci-Fi novel about the US National UFO Reporting center (fiction).

So where does Amateur Radio fit it? All the characters in the novel are radio amateurs. How often have you read a novel where the hero/heroine has a 'real' amateur call-sign and is active on two metres?

It makes fun reading when the bands are dead. Check out ISBN978-0-615-17632-1. Oh yes, N.L. Williams is also known as NR4RR in real life.

David Pilley VK2AYD

Book Review

continued from previous page

moved hams back to their roots with nostalgic older radios. The move to automation and computer technology signalled a decline in the radio hobbyist technical status. Computer hackers replaced hams. CB radio also took its toll on ham radio between 1965 and 1975. However a change of regulations and increased sunspot activity saw Ham radio popularity increase again. Combining radio and computers took the hobby in a new direction and saw hams as early adopters of the internet and this area continues to grow.

Ms Haring concludes that amongst many technical hobbies ham radio is an excellent demonstration of a technical culture for two distinct reasons:

1). Technical identification creating meaning for technology, and
2). Perceiving self in relationship to technology.

Many elements of this cultural history have parallels with Australian radio amateurs and their history and this is a very well researched and analysed description that integrates historical events, cultural aspects and the development of radio technology in America.

Well worth a read if you are interested in the history of this great hobby of ours.

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Silent Key

Stan Sonter VK4HEL

Stan passed away suddenly after arriving at work on Monday morning 10 November 2008, aged 46.

Stan was a loving husband to Karen who provided much support to Stan's hobbies, that is, amateur radio and boating. Stan gained his Novice licence a number of years ago after completing the Novice radio course with the Summerland Amateur Radio Club and was a member of the Summerland club, although residing on their small farm near Jimboomba. Stan was also a member of the WIA since gaining his Novice licence.

Stan had many friends among the amateur radio fraternity. His funeral was held at the Eco Memorial Park, Stapylton, Queensland at 2.00 pm Friday 14 November 2008, with the amateur radio community well represented.

We express our condolences and best wishes to his family and friends.

Submitted by Bruce Smith VK2VA.

Cloudbounce optical communication

Rex Moncur VK7MO and Justin Giles-Clark VK7TW

Distances of up to 209 km have been achieved on cloudbounce propagation with red light (474 THz) using the digital mode JT65a. The success of this work results from a range of innovative developments. Rather than use very narrow beamwidths such as from a laser, we use Luxeon[1] Light Emitting Diodes (LEDs) and comparatively wide beamwidths (2 to 15 degrees) to overcome the problem of alignment on clouds and avoid the high light intensity of lasers. The LEDs are focussed by either small plastic torch type lenses or small plastic Fresnel lenses to give optical gains of 20 to 35 dB. The receivers use a large (400 x 400 mm) plastic Fresnel Lens, to capture as much light as possible, combined with either multiple photo-diodes or a large area Avalanche Photo Diode (APD).

Background

Mike Groth VK7MJ[2] and Chris Long VK3AML[3] have pioneered the use of Luxeon LED transmitters and low noise receivers using Fresnel lenses for line of sight optical communication. On the 19th February 2005 Mike and Chris achieved a distance of 167 km. These techniques were taken further with a lower noise receiver[4] by Clint Turner KA7OEI to set a line of sight distance record of 278 km between high mountains in Utah USA on October 3, 2007. Yves Garnier F1AVY has achieved a cloudbounce distance of around 50 km using an IR Laser. In late 2006 we started to examine options for non-line-of-sight optical communication and also added the Joe Taylor K1JT WSJT[5] computer program as a means of bringing the much weaker signals out of the noise.

Optical and electrical signals

An optical receiver produces electrons, or current, in proportion to the amount of light input. This produces the rather surprising result that if you increase the optical power by 3 dB you increase the electrical power by the current squared and thus the signal to noise ratio by 6 dB. To avoid confusion and distinguish between the optical and electrical domains we use the term dBo for optical and dBe for electrical.

Cloudbounce propagation

Providing the cloud layer is large enough to scatter all transmitter power, the optical signal is reduced in accordance with inverse square law plus an additional amount that is lost along the path mainly by scattering from air molecules and aerosols. This additional loss is called extinction. Under good conditions the extinction component is around 0.1 dBo/km or around 20 dBo (40 dBe) on a 200 km path. Paul Edwards VK7ZAS has developed a model of the propagation loss[6] which we have found is reasonably accurate in predicting performance; viz:

Equation 1

$$PR = PT - 65 - 20 \log (d) + Gs + 10 \log (A) - e.d - 10 \log (ML)$$

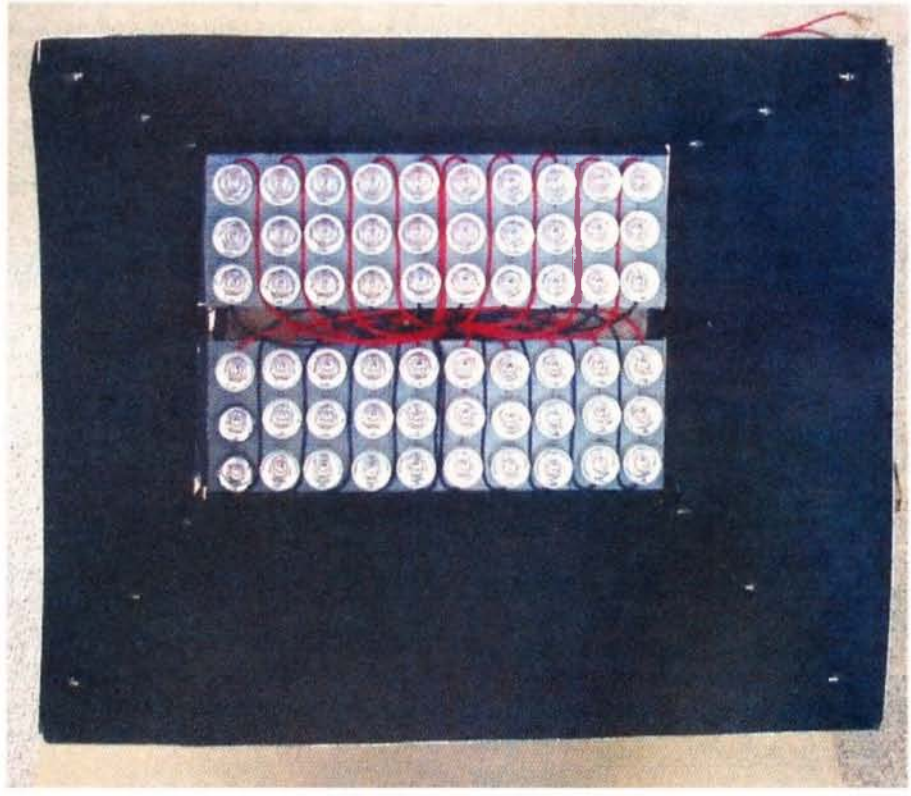


Figure 1: 60 Luxeon LED array with torch lenses.

Where:

- PR = received power (dBWo)
- Pt = transmitter power (dBWo)
- D = distance (km)
- Gs = scatter gain
- A = receiver aperture light collecting area (square metres)
- E = the extinction loss (dB/km)
- ML = the mismatch loss which is the square of the ratio of the RX beamwidth divided by the TX beamwidth.

This equation tells us that the received signal in optical terms is reduced as the



Figure 2: 60 Luxeon LED array with secondary Fresnel Lenses (photo courtesy of A de Quincey VK7NDQ).

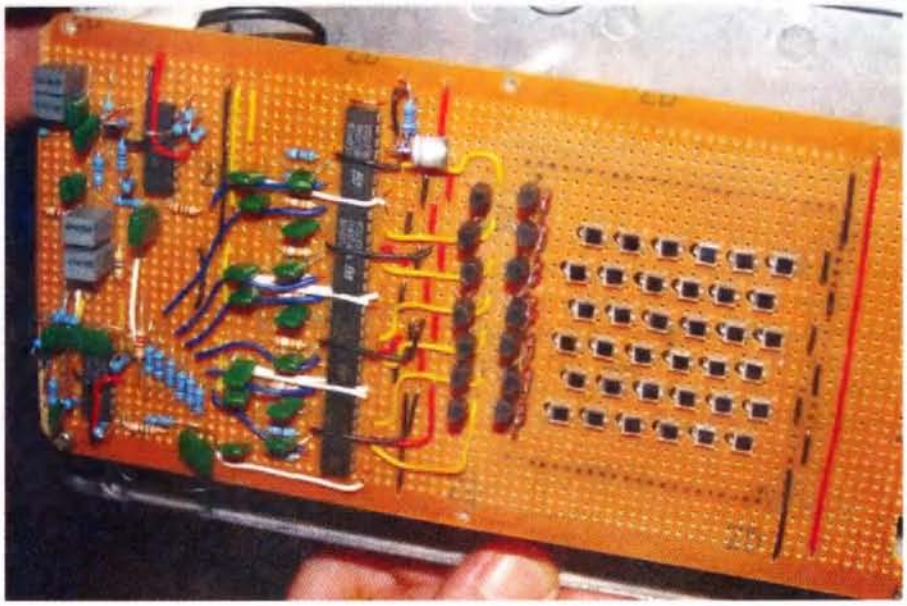


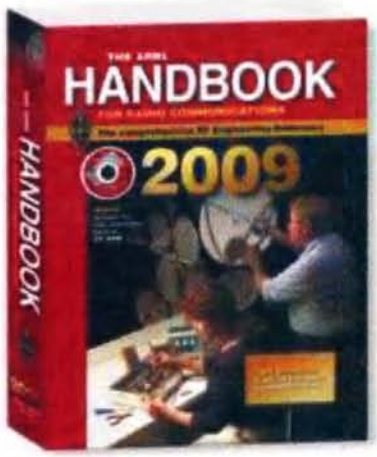
Figure 3: 35 PIN Photo-diode array.

square of distance, in proportion to the extinction loss times distance and as a result of the mismatch between the receiver and transmitter beamwidths. The received signal is increased in accordance with transmitter power, the area of the receiver primary lens and a factor Gs called the scatter gain. This scatter gain is due to the same physics as aircraft enhancement and arises because the size of a rain drop at 474 THz is similar in terms of wavelength to that of an aircraft at VHF. From our results the scatter gain[6] is around 10 dBo above isotropic in optical terms giving a very significant improvement of 20 dBe in electrical signal to noise ratio.

Practical constraints in scattering from clouds

Traditional optical transmitters such as developed by VK7MJ and VK3AML achieve very high optical gains by using beamwidths of less than a degree. Such narrow beamwidths are practical for line of sight work as one can visually align on the transmitter beam. However, in the case of long distance cloudbounce there is nothing visible on which to align. Thus it is necessary to use broader beamwidths

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Figure 4: APD receiver with Fresnel Lens.

and also improve system performance to compensate for the lower optical gain. System performance can be improved by using narrow bandwidth digital modes and also by increasing transmitter power such as by using multiple LED arrays. Fortunately as distance increases the range of elevation angles reduces such that one can work with narrower beamwidths (down to a few degrees) and in part make up for the extra losses as distance increases.

Transmitters

The transmitters we are using are based on Luxeon III LEDs which give around 0.5 watts optical output that can be electrically modulated to allow the use of very narrow bandwidth digital modes. They are relatively inexpensive and can be used in banks to increase the power. There are two practical options to produce gain with the Luxeons:

Small plastic torch lenses that give a beamwidth of around 15 degrees and a gain of around 20 dBo or 40 dBe.

Small plastic Fresnel lenses such as are used to assist the sight impaired with reading that produce a beamwidth of a few degrees and a gain of around 35 dBo or 70 dBe.

We have found that the wider beamwidth of option (a) is required at shorter distances, up to a few tens of km and that it works effectively to around 150 km with our best receiver. However, the higher gain of option (b) is required at longer distances with the downsides being that it is much more difficult to achieve correct alignment and the transmitter is far more difficult to construct and its size makes transporting challenging.

Figure 1 shows the 15 degree beamwidth 60 LED transmitter using torch type lenses that has been successfully used up to 165 km. Figure 2 shows the 2.2 degree beamwidth 60 LED transmitter that uses additional Fresnel lenses to increase the optical gain and has been used successfully at 209 km with best signals of -6 dB on the WSJT scale.

Receivers

Our initial approach was to use a single photo-diode with a Fresnel lens as used for the line of sight work by VK7MJ and VK3AML. When using photo-diodes the receiver performance is generally limited by the noise of the pre-amp. Clint Turner KA7OEI's web site[7] gives a great review of pre-amp developments, leading to his significantly enhanced pre-amp. By changing to the KA7OEI pre-amp we were able to improve system performance by around 14 dBe.

An issue with a small photo-diode and a typical large Fresnel lens is that the receiver beamwidth is very narrow and thus there is excessive mismatch loss. To reduce the mismatch loss we made up a 35 photo-diode array (Figure 3) which produced a further 14 dBe improvement in system performance.

While the noise figure of the KA7OEI circuit is good it still limits system performance to well above external noise. A second receiver was then constructed with an Avalanche Photo Diode (APD). These have significant gain which can

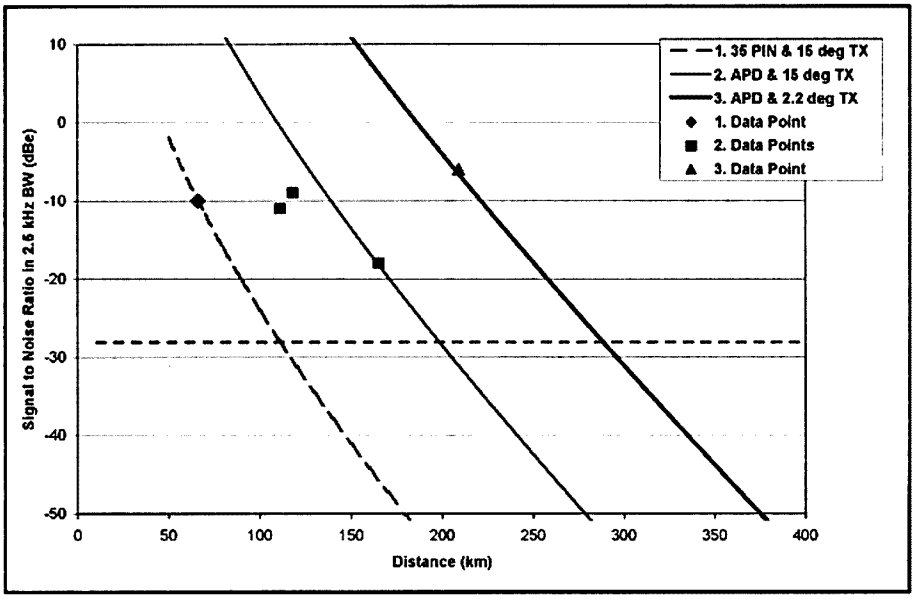


Figure 5: Estimated performance with distance based on inverse square law and an extinction loss of 0.1 dB per km for the three equipment arrangements used in trials.

overcome much of the pre-amp noise. One also needs a large area APD to avoid excessive mismatch loss. The largest units available are 10 x 10 mm but are expensive at around $1400. Still by using a large area APD receiver (Figure 4), we gained a performance improvement of around 30 dBe compared to the 35 photo-diode array.

Performance with present equipment

Figure 5 sets out the results of trials conducted with the following equipment arrangements:

35 PIN Photo-diode receiver and 15 degree beamwidth transmitter

APD receiver and 15 degree beamwidth transmitter

APD receiver and 2.2 degree beamwidth transmitter

Based on Equation 1 curves are drawn through the best result achieved with each equipment arrangement to give an indication of likely best achievable performance with distance. It is noted that a distance of up to around 300 km might be achievable using JT65a and that this could be extended further with even narrower bandwidth modes such as Jason[8].

Cautionary notes

Fresnel lenses should be covered when not in use especially before the sun rises in the morning! These lenses have the potential to focus the sun's energy to a point of around 1 mm and can easily start a fire in the wooden box surrounding the instrumentation.

Australian regulations[9] limit the impact of bright lights on aircraft operations and in particular the targeting of aircraft with high intensity lights such as lasers. While the intensities of our LED transmitters do not approach those of lasers it is still possible to exceed safety limits when operating near an airport. Thus those contemplating the use of high power LED transmitters should consult the regulations and refrain from operating near airports.

APDs run with high reverse bias voltages of up to 400 volts. Caution is required when experimenting with them including adequate insulation and protection especially as these devices are usually operated in the dark!

Conclusions

209 km has been demonstrated on JT65A with more than 20 dBe to spare.

The present equipment should be capable of achieving around 300 km.

The use of Luxeon LEDs, relatively wide beamwidths, low noise receivers and narrow bandwidth digital modes is the key to this success.

Acknowledgments

We acknowledge the help of Paul Edwards VK7ZAS, Mike Groth VK7MJ, Clint Turner KA7OEI, Yves Garnier F1AVY and Chris Long VK3AML who have all been generous with advice and assistance. Also the help of the following amateurs in the various trials: K. Sulman VK7DY, D. Smith VK3HZ, B. Miller VK3BJM, D. Clarke VK3CY, J Gelston VK7JG and A. de Quincey VK7NDQ.

References:

1 Luxeon is a trade name for a Light Emitting Diode with enhanced optical output, which is manufactured by the Philips Lumileds Lighting Company. (http://www.luxeon.com/)

2 Information on the earlier work of VK7MJ can be found in *Amateur Radio* magazine April 1987 p.12 - 17 and May 1987 p.13 - 17.

3 Information on the work of VK7MJ and VK3AML, is at: http://modulatedlight.org/Modulated_Light_DX/MODULATED_LIGHT_DX.html

4 An excellent article on the development of low noise receivers by KA7OEI is at: http://modulatedlight.org/optical_comms/optical_rx1.html

5 K1JT's WSJT computer program is available at: http://physics.princeton.edu/pulsar/K1JT/

6 Paul Edwards, VK7ZAS and Rex Moncur, VK7MO "Over the Horizon Optical Communications – Part 2" *DUBUS* 1/2009

7 http://modulatedlight.org/optical_comms/optical_rx1.html

8 http://digilander.libero.it/i2phd/jason/index.html

9 Australian Civil Aviation Safety Authority Advisory Circular AC 139-23 (0) April 2007 "Laser Emissions which may Endanger the Safety of Aircraft" http://www.casa.gov.au/rules/1998casr/139/139c23.pdf.

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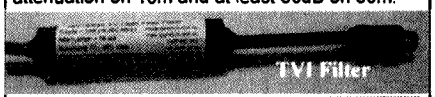
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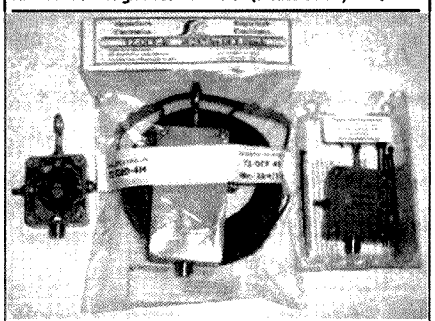
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Reflections on the Ingham flood of 2009

Felix Scerri VK4FUQ

As I write this, it has only been a couple of weeks since the floodwaters here in Ingham have receded, but thinking back over the whole period, it was quite a week or so!

Floods are not that uncommon here but it had been a while since our last major flood locally (2000), and it was about time for another one!

Heavy rain all over the northern area for some time, increased the river heights, when a small category one cyclone called 'Ellie' decided to make landfall north of us late in the evening of Sunday 1 February. A night of torrential rain followed and conditions were set for a major flood in Ingham.

Our local river, the Herbert River, burst its banks late afternoon on Monday and the first floodwaters arrived at this residence around 6 pm on Monday, 2 February. That morning saw a mad flurry of activity in 'preparation' for the flood: all the expected raising of things to above the expected peak flood height, and bringing some things upstairs, and moving family cars to higher ground, and urgent shopping for anticipated supplies. I also fell heavily and damaged my right shoulder badly in the process, but I soldiered on regardless!

My radio antennas received some preparatory attention also and remained operational throughout the flood event, although my home brew three element two metre beam shifted position slightly due to wind and flowing floodwater, but remained operational into our local repeater (in Townsville), and locally where I liaised with local amateur radio operators regularly throughout the flood.

My wire HF antennas continued to function well, despite the (balanced) feedlines being underwater for some distance! Our mains power remained intact along with the telephone service although it got a little noisy at times! It was just as well that we had mains power as, despite moving my solar panels upstairs, there was insufficient sun over the week to maintain good charge into my transceiver battery, and the mains battery charger was pressed into service once or twice in that period!

What made this flood event somewhat unusual were its two flood peaks, which saw our river again rising to essentially the same flood level, at this QTH, as the first flood peak earlier in the week. Thus Saturday morning was another very busy morning when it became obvious that another flood peak would soon arrive, after more heavy rain overnight.

My family's cars, retrieved after the first flood, had to be returned to high ground before the second flood peak. We were not the only ones. Hi.

It was 'interesting' doing my usual Sunday morning WIA National News broadcast and call-back group on Sunday 8 February from a QTH surrounded by floodwaters! There were a few comments made by the group about 'seafront' property, but muddy river floodwater isn't quite the same thing!

Floodwaters slowly started to recede for the second time by late Monday morning 9 February, and that signalled the beginning of a massive clean-up, something being repeated in practically every household around Ingham and throughout the district. The sight of large mounds of flood damaged items on kerbs was a very common sight in the local area at that time. There was also the matter of very high grass severely discoloured by days of flowing muddy river floodwater to contend with!

In the end, it was interesting contrasting this flood event in Ingham with the horrible bushfires occurring in the southern states and VK3 area. What a land of enormous contrasts and extremes is Australia! Whilst our floods caused significant infrastructure and other damage, it was almost nothing but a big inconvenience compared to the massive and horrible destruction caused by the bushfires.

In due course, after collecting our state government's assistance of a financial payout, I donated the full amount to the official Victorian Bushfire appeal. As they say in the classics, 'Thy need is greater than mine'. Yes that says it all!

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RECOM

Australia's quiet achiever in emergency communications

Jim Linton VK3PC

Red Cross Emergency Communications (RECOM) began a decade ago and quietly built up an enviable list of achievements of technology innovation and activations during floods, tropical cyclones and bushfires. Red Cross holds it in very high regard and its operators, all radio amateurs, are proud that the service they deliver is through amateur radio.

RECOM involvement in the summer bushfires in Victoria began with a phone call at midnight on 29 January, eight days ahead of what has been called the Black Saturday disaster of 7 February.

Red Cross Manager of Emergency Services in Victoria Adam Dent advised that relief centres at Mirboo North and Churchill had a number of communication difficulties with lack of fax machines and intermittent power failures, and RECOM was requested to re-establish the links between the two centres and the Red Cross Emergency Operations Centre (EOC) in North Melbourne.

For the next 19 days, RECOM was asked to cover similar situations in Traralgon, Warragul, Healesville, Yarra Glen, Kinglake, Toolangi, Woori Yallock, and at four centres in the municipalities of Cardinia and Casey.

Some of the deployments were short, as once the missing or destroyed communications infrastructure had been repaired the RECOM operators were no longer required.

Other deployments lasted for many days and some required considerable convoy travel to visit outpost registration areas as part of a Red Cross National Registration and Inquiry System (NRIS) field registration team.

When large numbers are involved, RECOM can load software onto other people's computers, and at a relief centre skilled typists can often be found among the volunteers to contribute to the keyboard work.

The Red Cross registered thousands of people on the NRIS during the bushfires. The database is essential; in not only helping relatives and friends locate disaster-affected people, but also for a range of emergency welfare and other needs of government agencies.

RECOM also transmits situation reports and Red Cross personnel deployment information. It can assist other agencies during the response phase of a disaster too.

Over the 19 days, Bruce VK3BMK, Peter VK3AUO, Warren VK3XSW, Donald VK3BPD, Graeme VK3BXG, Rob VK3EK, John VK3BQS, Graham VK3GBJ and John VK3ATQ were involved in the activation. Not all RECOM operators were active; those in other parts of the state unaffected by fire were held in reserve in case there was a local need.

A decade of RECOM

Red Cross Victorian Emergency Services, in responding to incidents and disasters, has a number of parts including registration, catering and first aid and Single Incident. It was heavily involved during the recent bushfires.

RECOM is a stand-alone emergency communications unit intended to serve the needs of Red Cross.

It was born out of the thoughts of a few visionary radio amateurs and Red Cross' Victorian Executive Director, Andrew Hilton, who had the foresight to adopt state-of-the-art technology.

That was in recognition that in Victoria there was a reduced role for traditional amateur radio voice communications than in the past.

Mr Hilton said, "When power and phones are not available, reliable and secure methods of data transmission are vital for emergency management".

'The Australian spirit was clearly evident with ... all doing their best to assist those who had lost so much or very anxious having been displaced from their homes.'

Peter VK3AUO

"Since its inception, the RECOM team has provided a unique and highly valued service – the contributions provided during numerous natural disasters including the recent bushfires have been outstanding".

Among the lessons learned by emergency services from the 1983 Ash Wednesday bushfire disaster in Victoria was the need to modernise radio communications systems including some inter-operability between them.

At a time when amateur radio digital communications with error correction was being increasingly used, innovation by radio amateurs turned it into a tool to meet the needs of Red Cross for a reliable and efficient means of transferring data.

From its outset RECOM decided that it would not have an elected committee, office-bearers, lines of command and the distractions of the usual organisational structure. It works well because all members are treated as equals while also having mutual respect for the skills and abilities of others.

It has a quite comprehensive Standard Operating Procedure. Every Thursday evening operators log into a nominated network station and download the latest RECOM news and technical tips on using the system.

Someone who is new to RECOM is mentored with lots of one-on-one tuition – there is a lot to learn.

John Patterson VK3ATQ explained that RECOM has now been operating for over ten years and not once has it used radio voice communications.



RECOM operators Peter Carter VK3AUO and Bruce Kidgell VK3BMK spent six days in the heart of the disaster area at Kinglake and Toolangi which had no other communications and no power.

It is the technology edge and amateur radio innovation that delivers the required results. RECOM has developed a complete suite of sophisticated software and hardware suitable for use in Red Cross emergency deployments, whether local or interstate.

Development of efficient lightweight hardware is ongoing. The optimisation of transmission and reception hardware in the area of distortion reduction is also a major priority.

Mr Patterson said, "The core technology is transmission by high frequency radio and it's 100% digital. The system is capable of transferring fully error corrected data at a useful rate when a similar power level voice signal would be totally inaudible".

"We are able to operate when signals are 23 dB below the noise making the likelihood of band conditions prohibiting communications unlikely".

Among each operator's equipment is a transceiver running at least 100 watts, HF modem with special firmware, laptop computer with special software, antenna tuner, generator, various wire antennas and a very efficient mobile antenna set-up.

When stationary, the poor efficiency of standard mobile whip antennas is addressed by adding a five-metre extension with a capacitive hat.

RECOM units have Iridium satellite data terminals available as backup to their HF radios; however they were not used during the recent fires.

To make the best use of the relatively low-baud rate HF transmission platform, the data is highly compressed using software developed by Donald Patterson VK3BPD.

The data is encrypted to satisfy the legal requirement for confidentiality when transmitting personal details of evacuees, and the encryption key 'rolls' after each transmission interval.

All data is time stamped and stored at the sender's and receiver's end, for later analysis in the event of a Coroner's inquest. Each computer in the field is remotely time-locked to a GPS clock operating at one of the RECOM Network Stations.

Network Stations are able to download message log files or logs of frequency management data, update link messages, and extract any relevant files if the field station is unattended for any reason.

In 2003 during the Bogong forest fires in north-east Victoria, there was a serious problem for RECOM of not knowing where its operators were while travelling in areas of major fire activity.

A system has now been established

RECOM - list of major activations to date

2003	Victoria - fires Beechworth, Bright, Mitta Mitta, Eskdale and Omeo (January).
2004	Northern Territory - Cyclone Fay (March 3).
2005	Northern Territory - Cyclone Ingrid (March 13).
2005	Victoria - fires Wilsons Promontory, Barry's Beach (April).
2006	Victoria - fires Horsham, Ararat, Whittlesea, Sebastopol, Moe.
2006	Northern Territory - Cyclone Monica (April 24).
2007	Victoria - fires Bairnsdale, Sale, Traralgon, Bruthen, Swifts Creek, Omeo, Lakes Entrance, Buchan, Orbost, Moyhu (January).
2007	Victoria - floods Paynesville, Lakes Entrance, Bairnsdale, Sale (June).
2007	Western Australia - Cyclone George (March 8).
2008	Queensland - floods Emerald (January 21).
2008	Queensland – floods Mackay (February 16).
2008	Victoria – fire Elaine (January).
2009	Victoria - fires Mirboo North, Churchill, Traralgon, Warragul, WooriYallock, Healesville, Yarra Glen, Kinglake, Toolangi, Cardinia, Casey (January and February).

There were a number of other activations that lasted a day or two.

where all RECOM mobiles are GPS traceable by any station in the network. Having the mapping available while mobile also helps with local navigation when looking for a relief centre or other location.

The operators leave home with their gear running while mobile and on arrival at an assignment usually operate from the vehicle. A small generator is used to float the vehicle battery.

If they need to operate their lap-top within a relief centre this is achieved by a run of RS232 cable or a Class 1 Bluetooth wireless link. The set-up allows them to operate instantly on arrival.

Peter Carter VK3AUO said, "We often operate in the very hot weather that normally goes with bad fire days".

"Keeping out of sunlight is the first requirement, followed by air flow with fans blowing over the equipment is a big help. Some manner of evaporative cooling is also very helpful".

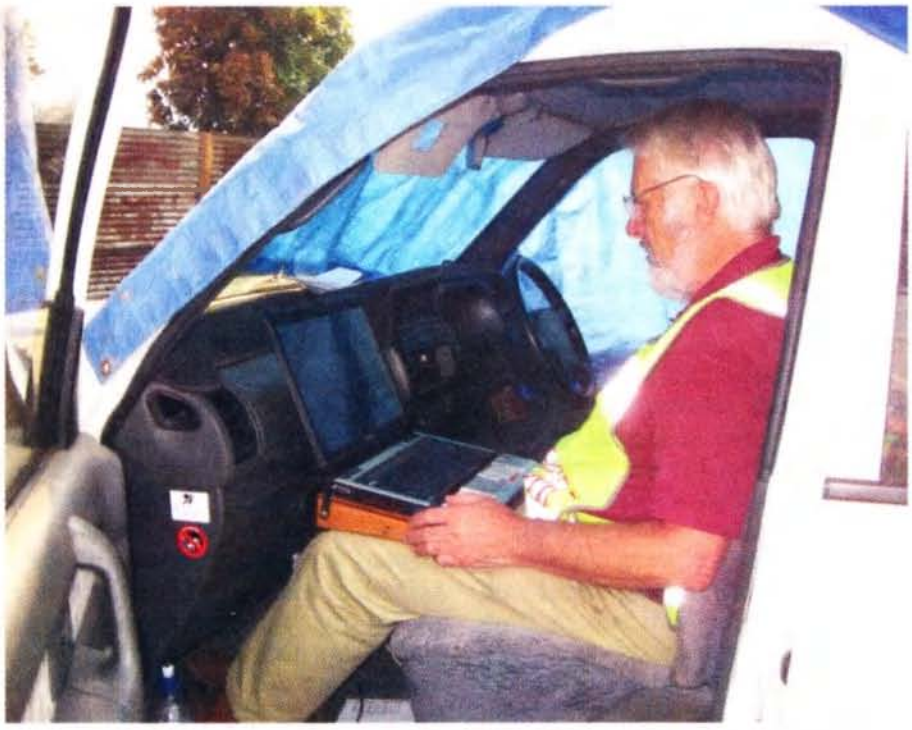
"Computers can be problematic in hot weather. Fast processors like Pentium 4s run hot and in some brands of computers the heat transfer pastes dry out very quickly and are subject to heat stress, slowing down the rate of processing and the introduction of errors."

Currently RECOM has about ten members who are in a position to go out into the field at a moment's notice by cancelling other commitments. Other members are equipped to carry out the Network Station duties.

It has earned and enjoys very high regard at Red Cross, while at the same time always proudly letting everyone know that "it is amateur radio" and radio amateurs providing the service.

A report on the style and success of RECOM will be presented to the 5th Global Amateur Radio Emergency Communications (GAREC) Conference in Tokyo in August this year.

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RECOM's Bruce Kidgell VK3BMK operating with the vehicle cabin well covered to reduce the impact of solar radiation.

RECOM volunteers driven by satisfaction

Typical of the RECOM members is Peter Carter VK3AUO who has been involved in fires and floods.

Why do they do it? Peter VK3AUO said, 'It's the satisfaction in providing a voluntary service and there's technical satisfaction in making the system work.'

'Hopefully we are not testing Murphy's Law by saying that we have not failed to deliver the goods.'

RECOM volunteers are radio amateurs and special people who demonstrate an extraordinary commitment to an important job, although each of them is humble when asked about it.

Peter VK3AUO was one of those operating in the field during the recent bushfires. 'We were providing a technical service in the background of other activities occurring at emergency relief centres.'

'These centres have an emotionally charged atmosphere with many people obviously experiencing the most desperate times of their lives.'

He said while assigned at an emergency relief centre RECOM members attend the community meetings to keep in touch with the latest fire information from the Country Fire Authority and other agencies.

Peter VK3AUO said, 'The Australian spirit was clearly evident with authorities and agencies, and ordinary citizens, all doing their best to assist those who had lost so much or were very anxious having been displaced from their homes.'

'This disaster particularly saw utilities and local government responding very quickly with the restoration of power, clearing of roads, and Telstra offering free mobiles chargeable at normal land-land call rates for bush fire affected people,' Peter noted.

A self-help attitude was evident in fire affected areas where some people were able to stay rather than evacuate.

He said, 'It was neighbour helping neighbour, and when RECOM members arrived to do their job the residents went out of their way to find a place in their homes for them to sleep the night.'

The small group of RECOM operators each holds an Amateur Radio Advanced Licence, and are special people with a technical information, technology or communications background.

Their commitment is 100% to RECOM to the exclusion of being a volunteer in other emergency services. They attend weekly on-air training and do other preparation to be ready for instant deployment of at least seven days. Currently the group is seeking to recruit another four members.

News from...

VK2

Tim Mills VK2ZTM
c/- amews@tpg.com.au

Notes like these have to be written a few weeks ahead of publication and often clubs and groups make changes in the mean time. This happened when reporting on the **Oxley Region ARC** and their meeting arrangements - last month. As reported, the club has returned to meeting at Port Macquarie's SES facilities. Many club members have now joined the SES to assist in communication and similar roles. Training nights with SES are on Wednesday so the Club has moved the Wednesday club net to Tuesday evening at 7.30 pm on repeater 6700. The monthly meeting remains on the first Saturday afternoon at 2 pm and the informal evening gatherings have been reduced to one a month - the fourth Friday at 7 pm. All these meetings occur at the new SES location in Central Road, Port Macquarie. It is now a couple of months [June long weekend] until the annual Oxley Region Field Day – plan to attend now.

Over Easter - the annual **Urunga Convention** at the Senior Citizens hall in Bowra Street, Urunga. Details from Ken VK2DGT 02 6652 3177 or krgolden46@hotmail.com or do a web search on Urunga Radio Convention or check out page 34 in March Amateur Radio.

St. George ARS have just had their AGM with Paul VK2EPH giving Brian VK2GCE a well earned rest from being the President. St George ARC meets on the first Wednesday in the 1st Kyle Bay Scout Hall at Connells Point.

NSW WICEN held a special general meeting last month at the Dural VK2WI site. There are several regional AGMs taking place this month. There is Northern Rivers on the 5th. Central Coast have moved theirs from the 11th to the 18th and Hunter Region is on the 21st.

Waverlay ARS normally have their annual auction mid June. Plans for this year yet to be advised as the hall at their club rooms is in constant use by others.

ANARTS - the Australian teleprinter group have an annual worldwide contest mid year. They are seeking a contest manager to relieve Patricia VK2JPA who wishes to retire from the position.

Liverpool and District ARC have just held a workshop to construct a Flower Pot antenna for 2 metres to a design developed by John VK2ZIO from HADARC. Contact point - Garry VK2BR 02 9896 5763 or vk2tsr@bigpond.com

Taree and District ARC held their AGM last month with all the office bearers from the previous year getting another shift in the same positions. Their April meeting, on the 7th, will be, as usual, at the TAFE College, Montgomery Crescent, Taree. Local area repeaters 6825 and 6675 are linked and used on Monday night for the club net. Repeater 8325 is stand alone. A contact point is via Mark VK2AMS 02 6551 0126 or vk2fre@wia.org.au Mark is also the contact point for local exams.

Ray VK2HAY on behalf of the **Central Coast ARC** thanks everybody who attended the recent Wyong field day for their support. He said in a recent news item ... *We stage this event to help Amateur Radio show-case our hobby. It entails over nine months of hard work before the Day, plus great economic risks ... We would like your comments about the Day and any views or improvements you would like to see at Wyong ....* contact point for Ray is 02 4325 2182. This year assessments were conducted at the Wyong Field Day. Terry VK2UX advised that the eight candidates were successful on the day, having prepared by undertaking 18 assignments.

Hunter Radio Group conducted their AGM last month. They meet on the second Friday evening at the NBN TV studios, Mosbri Crescent, Newcastle. Contact point is Rodney VK2CN. Their news net – VK2AWX – on Monday at 1930 covers VK1WIA and VK2WI highlights for that week, along with local news.

The **Blue Mountains ARC** have advised they have beacons planned for 2 metres, 70 and 23 cm. Details are to be found in the beacon portion of the current Callbook and WIA web site. The allocated frequencies are those ending xxx.424 MHz on the respective bands.

The **NSW Division** will conduct their AGM on Saturday April 18 at their VK2WI Dural site. At the close of nominations on the 7th March, the Returning Officer – Peter VK2EMU – advised that 13 candidates had offered for the nine Council positions. The ballot papers and other meeting material are currently being sent to members. The 'shed' had been constructed by early last month. As part of the building will be used as a training centre, this requires additional regulations to be addressed under various building codes and standards. As part of earthworks carried out by Peter VK2JBP with the shed, early this year he turned his talents to reconstructing and sealing the entry driveway to the VK2WI site.

On the last Sunday of the odd months, the **Trash and Treasure** morning and **Home Brew and Experimenters** afternoon gathering are conducted at the VK2WI Dural site, 63 Quarry Rd. This year's dates are May 31st, July 26th, September 27th and November 29th.

As mentioned last month, ABC TV *Collectors* program is scheduled to carry a segment about Ian VK2ZIO's **Kurrajong Radio Museum**, on Friday the 10th of April, at 8 pm.

The **VK2BWI** operator provided Morse training sessions has lost a valuable contributor when Alan VK2ADB became a SK in late February. The service is being maintained by Ross VK2ER on Thursday at 2000 hours on 3550 kHz. Ross would like to hear from anyone who might like to join the operation. This can be from anywhere in south east VK. Give him a call after the session.

In late February the Sydney **VK2RSY** 2 metre beacon was restored to service when a new transmitter was commissioned by Station Engineer Mark VK2XOF at the VK2WI Dural site. This purpose built transmitter continues

the service first established in the early 1970s. It is on 144.420 MHz, CW mode, with 20 watts into the existing two bay crossed dipoles, currently on the roof of the VK2WI building. New antennas, yet to be obtained, will be placed on an elevated location at the Dural site. For operational reasons the beacon is off line during the Sunday broadcast periods. Within the first day of its return the beacon produced many reports - extending to Port Macquarie in the north to Wagga in the south. Further reports are most welcome, one submission method is via the news email - arnews@tpg.com.au – with 'beacon report' in the address header. At the same time a new transmitter was placed in service on 6 metres – 50.289 MHz – 20 watts CW to a dipole – to free up a transceiver that had been providing the service. A transmitter for 70 cm – 432.420 MHz – is in the course of construction to restore this service. Later, a new transmitter will also be constructed for 10 metres – 28.262 MHz – as a replacement for the current ageing unit. The 23 cm beacon – 1296.420 MHz – was replaced last year with a 20 watt unit. Updated details of the VK2RSY and VK2RWI systems appear on the WIA web site for beacons and repeaters.

In closing – the find of the month. One of the VK2WI broadcast team travelling up for an evening session was scanning a road side 'Council clean up' when something caught his eye, resulting in a rapid stop and back up. There, on the kerb side was a pre WARC HF transceiver, complete with microphone and other bits. Condition not advised by the finder as I prepared these notes but it would still be something too good for 'landfill'.

VK3

Amateur Radio Victoria News

Jim Linton VK3PC
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

Black Saturday Bushfire Disaster

The Council of Amateur Radio Victoria, at its meeting on Tuesday 3 March, unanimously passed this condolence motion in respect to the recent bushfire disaster.

Council extends its deepest sympathies and condolences to those who lost loved ones in the 7 February Black Saturday bushfires.

Everyone has been affected either directly or indirectly by the fires. We recognise the enormous loss, hurt and pain being experienced at the moment and to be felt for many years to come.

Council recognises that this, the darkest moment in peace-time history, the tragic events of the bushfires also brought to the fore the vital work of fire fighters and other emergency service personnel.

Council acknowledges that throughout the community there is clearly evident humanity, mateship and caring for others: Those on the front-line of helping, providing aid and comfort; Ordinary citizens and corporations supplying donations.

Council wishes those involved in the disaster recovery efforts all success in their endeavours.

Council sincerely hopes that the Royal Commission brings down a report on which governments act promptly to avoid a repeat of what happened this summer and mitigate future outbreaks of wildfire.

Repeater report

The VK3RNU repeater at Mt Stanley was destroyed in the fires. The remains have been removed and a new repeater and antenna need to be installed.

Work is programmed for the VK3RML 2 m repeater and VK3ROU 70 cm repeater on Mt Dandenong. The restoration of the VK3RWZ Mt William repeater is also being organised.

The VK3RMM 70 cm (D-STAR) voice repeater on Mt Macedon has been upgraded and is now operating at full power. Work continues to get the 2 m D-STAR digital voice repeater and 1.2 GHz D-STAR voice repeater on air.

The German made modules for the digitisation of Melbourne's ATV repeater VK3RTV on Mt Dandenong have been purchased and progress is being made on that staged project which also attracted a $1,000 grant from the WIA under its club grants scheme.

The new VK3RPS 23 cm repeater at Mt Cottrell is now operational. Its frequencies are 1.27365 GHz and 1.29365 GHz. If you can operate on 23 cm FM and are within range please check it out. Amateur Radio Victoria has spent nearly $50,000 of member's funds on repeaters and repairs in the past two and a half years.

Five year plan

Council has confirmed Amateur Radio Victoria's continued participation in the annual events of the International Lighthouse and Lightship Weekend (August) and the Jamboree on the Air (October).

It will also support and encourage members to take part in the inaugural VK Shire Contest on 6 and 7 June this year. That contest has the added bonus of providing contacts to qualify for a number of awards including the Victorian Local Government Award.

The Centre Victoria RadioFest will return to Kyneton in the first quarter of 2010 A new date later in the year is also being considered, along with special event stations to mark centenaries.

These are all being discussed as part of a five year plan and member input to this planning process is welcome.

On air standards

The ACMA crack-down on bad apple operators seems to have also resulted in improvements in general on air operating standards.

News from...

Since 2006 thought has been given on the need to encourage and give recognition to good operating practice through a set of radio amateur guidelines or a code of practice.

A draft code contains the following:

- Recognise that the amateur radio community is made up of a diverse range of people with various backgrounds, abilities and other personal attributes.
- Support continued harmony within the amateur radio community, putting aside personal feelings and emotions.
- Encourage newcomers and the less experienced in a way that makes them feel welcome and supported to personally grow in the hobby.
- Do not knowingly cause interference or engage in any other activity that lessens the enjoyment of amateur radio for others. Do not use amateur radio to offend other radio amateurs or listeners.
- Appreciate the history of amateur radio, from its beginnings when wireless was a scientific oddity through to its existence today in the information technology age.
- Recognise the traditions, operating practice, band plans and other self-regulated measures that achieve orderly participation on the amateur bands.
- And finally, to personally acknowledge that amateur radio is a privilege and not a right.

It remains as a suggested starting point to address those practices in modern day amateur radio that are unacceptable to the majority, or have not kept up with other positive changes in our society including tolerance, harmony and equity of access.

Foundation class

The next weekend training and assessment sessions for the Foundation Licence will be May 23 and 24, at Box Hill North. For inquiries or to enrol contact Barry Robinson VK3JBR 0428 516 001 or foundation@amateurradio.com.au

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

Life Membership

Life membership was recently awarded to two long standing club members.

Lee de Vries VK3PK for his contribution to the club which included:

- Over two decades of membership.
- Organising and participation in the running of the Foundation Licence training program.
- Running the microprocessor group.
- His technical input to the GARC's repeaters and beacons.
- Several terms as Club President.
- His active promotion of the club and the hobby of amateur radio in the local community.

Barry Abley VK3SY for his contribution to the club which included:

- Barry's tireless commitment to the prosperity of the club over several decades of membership.
- His past and continuing representation of the club on various external committees, including the East Geelong Recreational Reserve Committee.
- His long standing role as the Club's Public Officer following the club's incorporation.
- His active promotion of the club and the hobby of Amateur Radio in the local community.

Both nominations were proposed by Chas VK3PY and seconded by Ken VK3NW.

Victorian Bush Fire Appeal

At a recent barbeque event at the club house in Storrer Street over $150 was raised by the club members towards the Bush Fire Appeal.

Eastern Zone Amateur Radio Club

Chris Morley VK3CJK

The EZARC committee has been busy over the last month. Not only are we planning for the annual GippsTech conference to occur over the weekend of 11 and 12 July, we have also been contributing to the planning of the WIA AGM weekend of events.

As should by now be clear to all, the GippsTech – Special Event is a one-off event being organised as an attraction to complement the WIA AGM weekend of activities. That program is now full and offers presentations across a broader range of topics than the traditional VHF, UHF and microwaves focus of the annual event.

The Conference Chair Peter VK3KAI has started to receive offers of presentations for the annual conference in July, but more are needed. Please contact Peter via email (vk3kai@wia.org.au) with your proposed talk topic and requested duration. We will provide more details about the annual GippsTech event as we approach July – keep an eye on the GippsTech section of the club web site: http://www.vk3bez.org/

At its last meeting, several committee members contributed to a presentation on the key controls that one must correctly adjust on your transmitter. The presentation was a stimulus for many questions and some lively discussions.

The committee is currently determining the activities that we will undertake on meeting nights over the coming months. We meet on the first Thursday of the month in Churchill – venue details are on the club web site.

QTC VK4

First Published July 1927 "Of, By and For the Amateur"
NEWS FROM/FOR QUEENSLAND RADIO AMATEURS

Christopher Comollattie VK4VKR
email vk4vkr@wia.org.au qtc@wia.org.au

First things first

In the March edition 2009 of AR I made an error and was promptly advised by the affected party (SCARG). Thank you Ken VK4KD for pointing out the error. I VK4VKR would like to apologise to the following two clubs for the error:

1. The Sunshine Coast Amateur Radio Club Inc.
2. The South Coast Amateur Radio Group.

Regional HF Nets

Monday Evening - Mackay Club Net VK4WIM Net Control – 3597 kHz from 0930 Z

Tuesday Evening - RADAR Net VK4WIR Net Control – 3613 kHz from 0930 Z

Wednesday Evening - Gold Coast Net VK4WIG Net Control – 3605 kHz from 0930 Z

Thursday Evening - Henry Fulford Memorial Net VK4WAT Net Control – 3588 kHz from 0930 Z

Thursday Evening - Sunshine Coast Net VK4WIS Net Control – 3660 kHz from 0930 Z

Thursday Evening - Hervey Bay Net - VK4CHB Net Control – 3615 kHz from 0730 Z

Friday Evening - Central Highlands Club Net - VK4WCH Net Control – 3618 kHz from 1000 Z

Friday Evening - Lockyer Valley Club Net VK4WIL Net Control – 3570 kHz from 0930 Z

Saturday Evening - Dariing Downs Net VK4WID Net Control – 3587 kHz from 0930 Z

Sunday Morning - WICEN QLD Net VK4IQ Net Control – 7075 kHz from 2230 Z

Sunday Evening - North Queensland Net VK4WIT Net Control - 3605.4 kHz from 0930 Z

Sunday Evening - Dalby and Districts Net VK4??? Net Control – 3585 kHz from 1000 Z

I submitted incorrect and confiising information regarding the clubs representation, the text should have read:

SCARG

The South Coast Amateur Radio Group consists of about 51 mature and experienced Amateurs. Meetings are held on the first Saturday Quarterly at 51 Castlehill Drive, Nerang at 2:00 pm

And not

SCARG

The Sunshine Coast Amateur Radio Group...

Now Welcome to April Edition of AR

TARC Raffle

The Townsville Amateur Radio Club Inc. are having a raffle - for Her and for Him. Launched by TARC Fund Raising Co-ordinator Ray VK4NET during the Australia Day Weekend Radio Family Camp, the first raffle by the TARC inc for 2009 is expected to raise interest - both for her AND him. Donated by Mr George Fotinos, mild mannered friendly local pharmacist and principal operator of the Terry White Pharmacy at the Stockland complex at Aitkenvale - the prize package with a total value of well over $300 consists of men's prestige fine fragrance, women's prestige fine fragrance and 1 box of 6 Royal Doulton fine glasses. Ray is organising TARC members and friends to sell books of tickets not only to those within the radio amateur fraternity but to the public at large so as to increase the base from which funds can be procured. Tickets are $1 each, and there are 10 tickets per book. Contact Ray VK4NET to get some books to distribute or sell and see book holders to get your tickets and try to win that prize, for Her AND for Him. Raffle drawn on April 7th 2009. Ray VK4NET is waiting by the phone right now for your call - ring 47 234 351.

WICEN NET

WICEN Queensland holds a net every Sunday on 7075 kHz from 8:30 am (2230 UTC). The net calls in regular stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3600 kHz. Mix it with other WICEN ops and call in on the net.

VK4 continued next page



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info@radioelectronicschool.net
Telephone 07 5573 2795 12-5PM AEST

Amateur radio – a bridge to careers in radio communications technology

News from...

VK4 continued from previous page

People in Profile

Something new from VK4 is ***People in Profile***:

Gordon and Mary Adams VK4GM and VK4PZ of The Caves (approx 25 km north of Rockhampton).

Gordon VK4GM joined The Wireless Institute of Australia on 19th April 1963 (certificate #34) and became an active operator under the call sign of VK4ZGA on 5th April 1967 then received his full call of VK4GM on 8th April 1972 which is still very active today. Gordon has maintained his log books up to date with some 30720 contacts fully logged and documented. Gordon has entered many contests and has a proud "wall of display" including an AJD award (All Japanese District) dated 12th April 1971, a Distinguished Service Award from the WIA and is a Life Member of The Rockhampton and Districts Amateur Radio Club.

Mary VK4PZ obtained her short wave listener's licence (#431) in 1968 and joined the WIA as an associate member.



Gordon and Mary's radio room

On 21st December 1976 Mary passed the Novice exam and obtained the call sign VK4NAW. Novices were crystal locked on 3.575, 21.200 and 26.760 MHz at that time. Her ambition was to use the six metre band so on 22nd May 1978 Mary obtained her Amateur Operator Limited Certificate of Proficiency (AOLCP) with the call of VK4ZPL. Next was the Morse exam on 21st January 1979 with the new call of VK4PZ which is also still very active today. Mary has also entered many contests, winning the 48 hour VK4 section with 1248 points of the Ross Hull Memorial Contest in 1980-81 Mary has been and still is an active member of ALARA since 1981, has a Distinguished Service Award from the WIA and is a Life Member of The Rockhampton and District Amateur Radio Club.

Many thanks to Gordon and Mary for their story and a fine cup of tea (or two) made from beautiful Queensland rain water.

Do not forget World Amateur Radio Day 18th April.

Until next time 73

VK4VKR (IRLP 6973)
On the side and listening.



The antenna farm



A beautiful view from the back yard

BARCFEST 2009

Barcfest 2009 will be held at Mt Gravatt show grounds Logan Rd Mt Gravatt.

Opening time will be 9.30 am on

Saturday 9th May

Admission is $7.00 per person. Children under 16 free if accompanied by a parent.

For more information contact Les VK4SO Barcfest organizer ph 0411 729 642

Or email parkerlf@optusnet.com.au

Forms and further information on the club website http://www.qsl.net/vk4ba/

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The AGM was held recently with only one change to the committee. Richard VK5ZNC has taken over the position of Treasurer from Hans VK5YX. John VK5EMI expressed our gratitude to Hans for the sterling service he has given the Society, and welcomed Richard onto the committee.

The President's Award was presented to Barry VK5ZBQ, in his absence that night, and in person at the next committee meeting. He was surprised and pleased to receive the certificate and cheque.

The planned speaker for the night had to drop out at the last minute but his place was filled by Steve VK5AIM who gave us a very interesting demonstration of a device he has made up to aid anyone needing to test their caravan plug and socket (or even the trailer connections on a semi-trailer!).

Most caravanners have had to make these tests when preparing for a trip. It usually involves at least two people, one to watch that the appropriate lights go on and off when they should while the other one presses the appropriate pedal in the driving cabin.

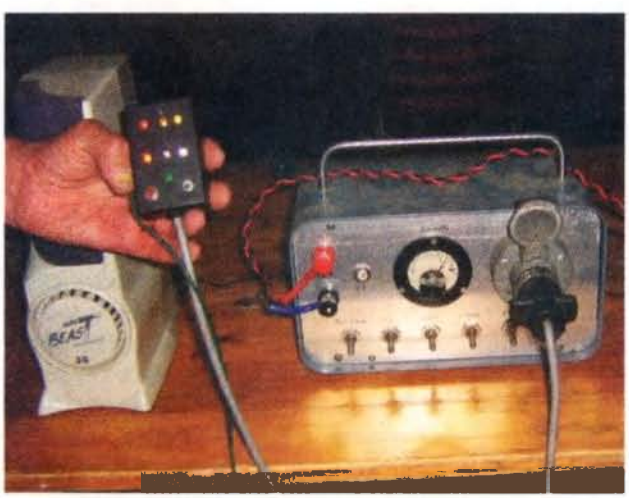
With Steve's arrangement just one person can do the check on their own.

There is a box to plug into the special socket on the tow bar, with a series of lights so the connections inside the plug can be checked. But to make the whole operation a one man job Steve has made up a long cable that allows him to sit in the driver's seat where he can push the appropriate pedals, and to see on the box beside him which lights are on or off and that all is as it should be.

A seemingly simple scheme that is extremely practical. The photos should make it all clear.

Regular meetings on the third Thursday of each month will be held during the year from May. For information about the speakers etc please contact David now VK5KC or Leigh VK5KLT.

A number of exams will be held during the year. Information about these, and about the other activities of the Society can be found on our (new look) website.



The plug and the display unit



Steve VK5AIM with the device



The box with lights to indicate each part of the car or truck's lights



The hand held section (to use while in the cabin, pressing the pedals)



The trailer plug and the hand display

News from...

South Coast Amateur Radio Club

Stef Daniels VK5HSX

2009 Summer VHF-UHF Field Day, February 2009 - VK5ARC/ Portable

After Christmas and with the start of the New Year, there are a few of the members who always know what it means: It is the 'Summer VHF-UHF Field Day', and who is interested in getting the station operational? The usual culprits are always ready to volunteer as operators for the event - Barry VK5KBJ, Stef VK5HSX and past-member and always a welcome participant, Andy VK5LA.

VK5ARC/P operation takes place from Loud's Hill, about 50 km south of Adelaide above the town of Willunga, and is a perfect mix of isolation from suburban noise and elevation from the surrounding terrain, with panoramic views in almost every direction. The owner of the property, Barry VK5KBJ, makes his hobby farm available for VK5ARC to use in contests and Field Days. At 300 m ASL, Loud's Hill is a great operating position, particularly for VHF/UHF contests. The exposed location, however, means that in January, conditions can vary from calm to howling winds, freezing cold to very hot, all in a 24 hour contest period. Participants need to be prepared for anything!

We began early Saturday morning, which was a slight change as we are often still setting up when 0100 UTC arrives. As a pleasant change we had the station set up, and had time for a drink, prior to getting stuck into the 24 hours ahead of us.

The contest began with pre-checks making sure preferred frequencies were not in use. With laptops going, headphones on and microphones in hand we began with the good old words 'CQ Contest, CQ Contest!' with a slight pause for replies to come back to us. We had three stations operating at once, covering all the bands from 6 m to 23 cm. This was also a perfect opportunity to test out the club's new satellite transceiver purchased not long beforehand. Andy VK5LA had a few plays with the rig to get some sort of 'on the job' training before operating the rig in the contest, working the 2 m and 70 cm sideband. We had Stef VK5HSX operating 6 m, using an Icom IC-706MKIIG connected to a multi-band dipole that tuned fairly well to the required frequencies. We had to forego the 6 m 8 element ATN Yagi previously used, due to storm damage last year. Barry was taking care of 23 cm, which became a valuable collection of points, scoring numerous contacts on a handheld connected to an omni antenna.

The afternoon on Saturday saw the path to VK3 open up, where we managed to work some stations on both 2 m and 70 cm. Sunday morning conditions were superb with many stations in south eastern Australia and Tasmania contacting many new grid-squares. VK5ARC/P made contacts to VK6 on 2 m and 70 cm. There was chatter about conditions, stating that it has been quite a while since this sort of thing happened for the Field Day.

All up, we managed to work 16 grid squares on 2 m, 11 squares on 70 cm and 2 squares on 23 cm. Station operators had an absolute ball, with the usual slowing down between midnight and just before sunrise. This allowed some time to get some shut-eye, just before the last few hours of the contest.

Thanks to all the stations who returned contacts, which provided points and making the whole effort worthwhile. Thank you to our members who came on air and gave as many contacts as they could possibly provide. It was much appreciated and perhaps some members may consider becoming involved with contesting in the near future.

The final tally for our station VK5ARC/P, compiled by Barry VK5KBJ, was as in the Scoring Table below.

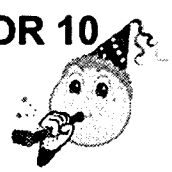
Regards from Stef VK5HSX on behalf of Barry VK5KBJ and Andrew VK5LA.

Scoring Table

Band	Locators Activated	Locators Worked	QSOs made	Band Multiplier	Total
	10 points each	10 points each	1 point each		
50 MHz	1	7	47	1	127
144 MHz	1	16	129	3	897
432 MHz	1	11	80	5	1000
1296 MHz	1	2	11	8	328
FINAL TOTAL					2352

Score = [(Locators activated + Locators worked) x 10 + QSOs made] x Band multiplier

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Congratulations!

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Radio Amateurs Old Timers Club of Australia

as an *associate member*

If you have been licensed more than 25 years then you are invited to join as a *full member* of the RAOTC.

In either case a $5.00 joining fee applies. The annual fee is $8.00 or only $15.00 for two years. The Club journal, OTN, is published twice each year and there are monthly news broadcasts. We also guarantee good fellowship.

Write to RAOTC,
PO Box 107,
Mentone, VIC., 3194
or call Derek VK3XY on 03 9563 6909
or Bill VK3BR on 03 9584 9512.

More details and membership application forms are available from our web site:

http//:www.raotc.org.au .

VK6

Keith Bainbridge VK6XH

Welcome to this month's offering from VK6

Firstly I must apologise for the brevity of this column. My usual monthly request fell on deaf ears and I have not received a single report from around the State.

It is with great sadness I must report the passing of Jack VK6JZ (formerly VK6AJZ). I have known Jack for many years, and have always been amazed at his ability to overcome his visual disability, his enthusiasm, and above all his attitude to life, one of life's true gentlemen. I will miss his comments and organisation of the net on 40 metres while I am driving around the state for work. Shalom old friend.

The contest season is well and truly upon us and I know some VK6 groups have been giving the John Moyle a thrashing this year. As a member of the NCRG we regularly took part in the JMFD but we were always disappointed with the lack of support from amateurs in our own state in the VHF section.

We always tried to get at least 50 km from Perth to maximise the points but there were very few amateurs to contact. Not like the RD contest where the turn out is amazing. Perhaps in future JMFDs locals will try to support the groups, such as the Hills Group and the Peel group, in their contest efforts. The NCRG members decided to give the JMFD contest away and to concentrate on the CQ WPX SSB contest for 48 hours the following weekend.

The VK6 – ZS beacon project is moving along nicely with assistance from Justin G0KSC. He has been working on an interesting approach to VHF Yagi design and has burned a lot of midnight oil coming up with a design for the four seven-element two metre Yagis that will be vertically stacked and horizontally polarised. His website has some really good designs for six metres and up, well worth a look! http://www.g0ksc.co.uk/

The PC has been procured and the WSJT software installed ready for testing to take place from my home QTH. The testing will use 25 watts from a Ten Tec 6N2 transceiver, and a seven element vertically polarised beam pointing towards Albany, so all reports will be appreciated. The NTAC (National Technical Advisory Committee) is considering the allocation of the final frequency to be used, until then all tests will be on 144.490 MHz and only while I am in the shack (which is a lot these days). There are a lot of enthusiastic ZS and FR amateurs keen to listen for it.

Hopefully VK6RIO (Indian Ocean) will be on the air before the summer season gets under way again. Wally VK6KZ is scheduled to give a lecture on beacons at the March meeting of the NCRG, to assist the club membership in understanding the very different needs of beacon operation as compared to the repeaters, and the 10 metre beacon the club already runs.

This email from the President of the HARG Mick VK6YXL arrived telling of news in the Hills Group!

Hold the front page! *The members of the Hills Group are as busy as ever planning a new tower and antenna system and preparing to assemble this exciting new station in the next few weeks. There has been a surge in membership, mainly from new Foundation licensees who are keen to assist in rebuilding the club, and this shows the hobby is picking up momentum in WA.*

There was a tremendous effort put in by members in the planning and execution of our swap meet day on 14 March, which was a huge success. We had a fantastic day and I would like to pass on my thanks and congratulations to those who assisted, those who donated and to all those who attended.

73 Mick VK6YXL, President HARG.

Thanks Mick. I was beginning to think the state had gone to sleep this month!

I will take this chance to remind you of this year's Hamfest, to be as always at the Cyril Jackson Recreation Centre, Fisher St Ashfield on Sunday 2 August at 9 am for buyers. Keep it in your diary because it is too good to miss!

With that I will wish all of you very 73 and hopefully I will have a little more input for next month's column.

William (Bill) Douglas Christie VK6NWD

Bill passed away on November 4, 2008 following a short illness, aged 67. He was an active amateur, relaying the WIA National and VK6 News on Sunday mornings on 80 metres from his QTH in Yarloop, for several years and right up to his time of passing. He was on the air every morning and afternoon with a group of amateurs providing his usual weather report and a welcoming chat. WICEN WA will miss Bill since he was an active participant for several years.

Bill was born in Werribee, Victoria and, with the family, shifted to Adelaide at an early age and it was here that he developed an interest in radio, building a lot of his own equipment. He joined the then PMG's Department as a technician but later transferred to postal services, subsequently moving to Ceduna. It was here that Bill commenced his involvement with community service which continued on throughout his life serving with volunteer fire services, Apex and other local organisations.

Whilst in Ceduna, Bill met his wife Val and family started to arrive.

Bill served the PMG in Maralinga and Woomera and then shifted to WA working in Trayning, Dalwallinu and Marble Bar. During 1970 the family relocated to Kalamunda and he left the Post Office to join Millars Timber Company working locally and then at the Palgarup and Yarloop Mills until his retirement.

His dedication to community service still continued until his death.

Bill leaves behind wife Val, three sons, a daughter and their families.

Vale Bill Christie

Submitted by Rob VK6PO.

News from...

VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

Repeaters and Beacons

Joe VK7JG has tracked down some of the interference issues with the VK7REC Snow Hill repeater on the east coast of VK7 and has fitted it with a 123 Hz CTCSS access subtone. This has reduced the intermittent triggering and further investigation of the cause is being undertaken. A new 10 m beacon has been commissioned by Hayden VK7HAY. Callsign is VK7RSC, frequency is 28.267 MHz, power is 10 watts, vertical polarisation and the location is listed as Lucaston in the Huon Valley. As those sunspots increase listen out for VK7RSC.

Broadcast Thank You

A big thank you to Jim VK7JH who let me know that after 20 years of doing broadcasts it was time to give it a rest and in Jim's words – "I have decided that there are too many other things I should be doing on Sunday mornings". Jim comments that things have certainly progressed – 20 years ago it was cassette tapes and unreliable RF links! We wish you best wishes and good luck for the future.

North West Tasmanian Amateur Radio Interest Group

The regular coffee mornings have started again and are moving along the NW coast. XYLs and families are encouraged to come along – stay tuned to the VK7 Regional News broadcast for news of the next one. It is a great place to meet up with old pals and the newer members of amateur radio. The Valentine's Day BBQ at Hiscutt Park was a great social occasion with good food and company.

Northern Tasmanian Amateur Radio Club

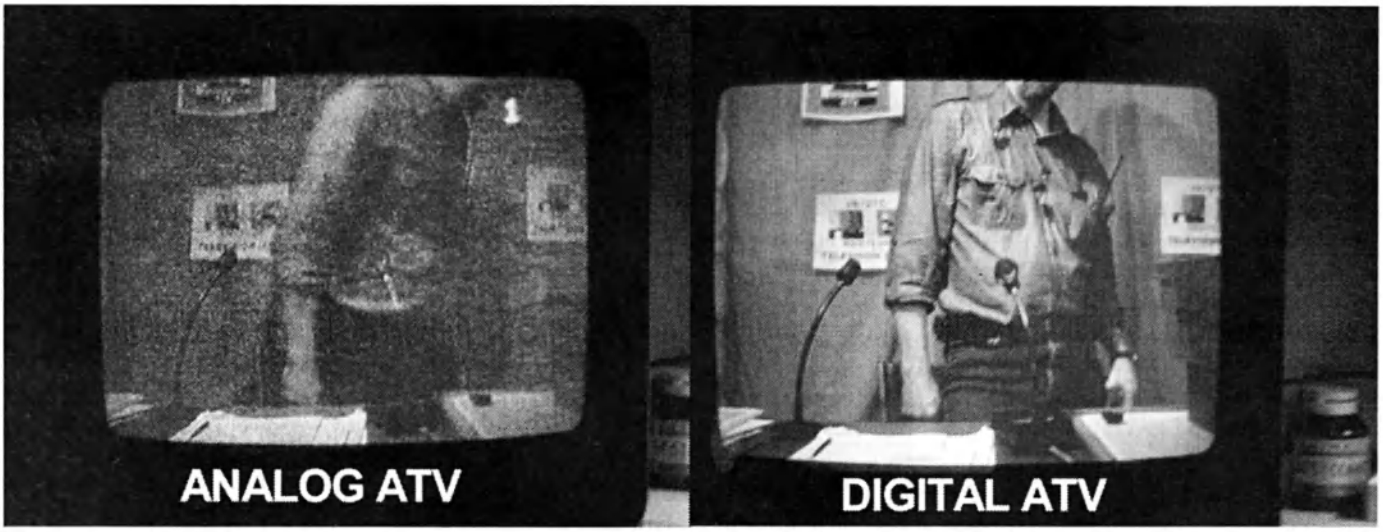
February 11 was NTARC's AGM and Executive Office holders for 2009 are: President – Allen VK7AN, Vice-President – Bill VK7MX, Secretary – Jason VK7ZJA, Treasurer - Ann VK7FYBG. Phil VK7JJ gave a talk on his HF squid pole multi-band vertical and the club organised an order for 30 which would have been accounted for by the time this goes to print. The poles extend to 9 metres and cover 80, 40, 20, 30 and 15 m. VK7 HF portable operation has never been better equipped!

Radio and Electronics Association of Southern Tasmania

Congratulations to Corey Clark and Robert Wise who were both successful in gaining their Foundation licences and also Gary Wilmott, Tony Clifford currently VK7FACC and Ron Petersen who is currently VK7FEAA who gained their Standard licences in the February assessment session. We look forward to hearing you on the air sporting your new callsigns.

The ATV experimenters' nights have been a roaring success and we have been playing 23 cm Digital ATV thanks to Jack VK2TRF who has lent us a 23 cm DVB-S encoder/exciter. Comparison between our normal 70 cm analog ATV signal and the 23 cm Digital can best be described as "chalk and cheese". Hi Hi. We are undertaking field strength/error rate tests over the next few months around Hobart. If you would like to be involved then we have tuned digital satellite receivers ready for loan. Thanks to Peter VK3PB and the crew from AmateurLogic.TV who produce a great free amateur radio program which is distributed via the Internet. Our ATV viewers have enjoyed these programs over the last year.

ar



70 cm Analog ATV versus 23 cm Digital ATV – Same location, similar antennas & transmitter powers (pictures from Tom VK7TL).

Annual General Meeting

Do not forget the AGM on the first Monday of May on or about 3.580 starting at 1000 UTC. We usually have a good roll up for the AGM; do not let this year be different.

Please listen out for those ZL girls who usually join us, if you hear a call no-one else is hearing, please help to include them in the meeting by acting as a relay.

The terrible bushfires in VK3

As far as the committee has heard, none of our members lost their lives but many were affected by the fires.

As ever the decision has to be made in the event of a bushfire, to stay and fight the fire or to evacuate to a place of safety. Whatever you decide, there is no guarantee that your house will survive when the fires have the intensity these did.

Probably all of us had phone calls or radio calls to ascertain our own safety. The TV stations all round the world carried images of the flames not always with accurate information about location (but would we be any more accurate if we were reporting about an event in a country so far away?).

Australia has always had and will always have bushfires but the enormity of these was different. For the people concerned the fact that their towns had escaped previous fires must have made it even harder to believe when they were told it was time to leave.

We should all be proud, also, that our small (in population) country has raised such an enormous amount of money to help those in such need.

And yes, we should be proud, too, of the amateurs who manned emergency stations and helped so many to find lost members of their families.

The regular luncheons

Firstly a small correction: The VK3 luncheons are held on alternate months, not every month, although irregular morning teas and participation in hamfests have become an important part of the scene in that state.

In VK5 the luncheons have taken on a new aspect with enthusiastic exchanges of ideas about "things we could do or places could go to" for the YL International 2012. It is all a long way ahead but if you think you are interested in participating, or if you have any ideas to contribute, please get in touch with Tina VK5TMC or visit the – as yet primitive – website she has set up. Go to www.ylinternational2012.110mb.com and see what is there.

If there is not yet, there will be a link to the site from the ALARA website, in time.

SYLRA Meet in September 2009

SYLRA the Scandinavian Young Ladies Radio Amateurs is holding a mini-international Meet in Oslo on 3rd to 7th September 2009. If you are interested in joining them put SYLRA into Google and follow the prompts. Oslo is to be followed by an expedition to Svaalbaad that might interest you, as well.

More later.

A Silent Key

ALARA heard recently that the OM of Kirsti VK9NL has become a Silent Key. Many of the amateurs who have visited Norfolk Island over the years will have met both Kirsti and her OM.

We send our sincere condolences to Kirsti.

As far as ALARA is concerned Kirsti has helped to publicise our small part in the world of amateur radio with articles in the various magazines, over many years.

EchoLink

If you have just got EchoLink up and running and want to talk to other YLs, get in touch with Shirley VK5JSH. She has all the nets at her fingertips. There are nets in the early morning, there are nets in the afternoons and there are now many YLs in England, Canada and New Zealand, as well as from here in Australia, who have become regulars.

It is a different way to enjoy a privilege you have earned by passing your amateur radio certificates. Only amateurs can use EchoLink and to prove that you are an amateur you have to produce your Certificate of Proficiency.

There are some who are critical of EchoLink because you do not have to strain your ears to hear the stations through the static, but in many ways it is only another way to enjoy the hobby, like packet radio or meteor scatter. Enjoy!

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GippsTech
Special Edition

The 2009 WIA AGM Weekend of Activities

This event brings together some of the finest speakers from GippsTech conferences to this special one-off AGM weekend event. Members who register for the event will be able to participate in a wide range of fascinating and highly informative radio related technical presentations by some of Australia's leading technical presenters

For more details: see inside back cover

OR

For full details and to book online, go to:

http://www.wia.org.au/joinwia/wia/gippstech2009/

Phone bookings & Inquiries 03 9729 0400

Gridsquare Standings at 14 February 2009

Guy Fletcher VK2KU

144 MHz Terrestrial

VK2FLR	Mike	113
VK3NX	Charlie	106
VK2KU	Guy	102
VK3KAI	Peter	87
VK3HZ	David	85
VK2ZAB	Gordon	78 SSB
VK2DVZ	Ross	75 SSB
VK2ZT	Steve	75 SSB
VK5AKK	Phil	75 SSB
VK3PY	Chas	72 SSB
VK3CY	Des	71
VK2EI	Neil	63
VK7MO	Rex	63
VK2TK	John	62
VK3QM	David	62 SSB
VK3BJM	Barry	61 SSB
VK3BDL	Mike	60 SSB
VK3KAI	Peter	54 SSB
VK3WRE	Ralph	54 SSB
VK3ZLS	Les	51 SSB
VK5BC	Brian	48 SSB
VK4CDI	Phil	47
VK3CAT	Tony	46
VK3VG	Trevor	46 SSB
VK7MO	Rex	45 SSB
VK2AMS	Mark	44 SSB
VK3II	Jim	43
VK4CDI	Phil	43 SSB
VK4KZR	Rod	43
VK7MO	Rex	43 Digi
VK3II	Jim	42 SSB
VK5BC/p	Brian	42 SSB
VK3KAI	Peter	36 Digi
VK4TJ	John	36 SSB
VK2TK	John	35 SSB
VK2KOL	Colin	34 SSB
VK3DMW	Ken	34
VK3EJ	Gordon	33 SSB
VK3ZUX	Denis	33 SSB
VK6HK	Don	33
VK2TG	Bob	32 SSB
VK3VHF	Rhett	29 SSB
VK1WJ	Waldis	27
VK2EAH	Andy	27
VK2TK	John	27 Digi
ZL3TY	Bob	24
VK3TLW	Mark	23 SSB
VK4EME	Allan	23
VK1WJ	Waldis	22 Digi
VK3BG	Ed	22 SSB
VK3ECH	Rob	20 SSB
VK4CDI	Phil	20 Digi
VK6KZ	Wally	20
VK4EME	Allan	19 SSB
VK3AL	Alan	18 SSB
VK3II	Jim	18 Digi
VK3UDX	Geoff	17 SSB
VK2EAH	Andy	16 SSB
VK6KZ/p	Wally	16
VK3VHF	Rhett	12 Digi
VK4EME	Allan	12 Digi
VK2EAH	Andy	11 Digi
VK2EI	Neil	11 Digi
VK2KOL	Colin	9 Digi
VK2ZT	Steve	7 Digi
VK1WJ	Waldis	6 SSB
VK6DXI	Mirek	6
VK6HK	Don	6 Digi
VK1WJ	Waldis	5 CW
VK4AIG	Denis	5 SSB
VK4JAZ	Grant	3 FM
VK3QM	David	1 Digi

144 MHz EME

VK2KU	Guy	317
VK2KU	Guy	302 Digi
ZL3TY	Bob	300
VK3AXH	Ian	233 Digi
VK4CDI	Phil	160 Digi
VK7MO	Rex	155 Digi
VK2FLR	Mike	120
VK3CY	Des	70 CW
VK2AWD	David	65 Digi
VK2KU	Guy	43 CW
VK3DDU	Paul	39 Digi
VK2ZT	Steve	28 Digi
VK3VHF	Rhett	20 Digi
VK3HZ	David	19
VK3II	Jim	10 Digi
VK3NX	Charlie	5
VK4EME	Allan	5 Digi
VK3AXH	Ian	3 CW
VK2DVZ	Ross	2 CW
VK3AXH	Ian	1 SSB

432 MHz Terrestrial

VK2ZAB	Gordon	57 SSB
VK3NX	Charlie	50
VK3PY	Chas	50 SSB
VK3QM	David	48 SSB
VK3ZLS	Les	40 SSB
VK2KU	Guy	38
VK3BJM	Barry	38 SSB
VK3HZ	David	38
VK5AKK	Phil	38 SSB
VK2DVZ	Ross	34 SSB
VK3BDL	Mike	32 SSB
VK3CY	Des	32
VK3WRE	Ralph	32 SSB
VK2ZT	Steve	30 SSB
VK3KAI	Peter	30
VK3KAI	Peter	29 SSB
VK5BC	Brian	25 SSB
VK3VG	Trevor	20 SSB
VK7MO	Rex	20
VK3UDX	Geoff	19 SSB
VK2TK	John	18
VK7MO	Rex	18 SSB
VK2TK	John	17 SSB
VK3CAT	Tony	16
VK5BC/p	Brian	16 SSB
VK2AMS	Mark	15 SSB
VK3BG	Ed	15 SSB
VK3TLW	Mark	15 SSB
VK3ZUX	Denis	15 SSB
VK4KZR	Rod	15
VK4CDI	Phil	14
VK4CDI	Phil	14 SSB
VK6KZ	Wally	13
VK2EI	Neil	12 SSB
VK2KOL	Colin	12 SSB
VK2TG	Bob	10 SSB
VK3AL	Alan	10 SSB
VK3ECH	Rob	10 SSB
VK3VHF	Rhett	9 SSB
VK4TJ	John	8 SSB
VK6KZ/p	Wally	8
VK7MO	Rex	7 Digi
VK2FLR	Mike	6
VK3DMW	Ken	6
VK4EME	Allan	6 SSB
VK6DXI	Mirek	6
VK1WJ	Waldis	4 SSB
VK2EAH	Andy	4 SSB
VK3KAI	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi
VK4CDI	Phil	4 Digi
VK3VHF	Rhett	3 Digi
VK4AIG	Denis	3 SSB
VK4JAZ	Grant	3 FM
VK2KOL	Colin	1 Digi
VK2TK	John	1 Digi
VK2ZT	Steve	1 Digi

432 MHz EME

VK4KAZ	Allan	14 CW
VK4CDI	Phil	13 Digi
VK7MO	Rex	10
VK7MO	Rex	9 Digi
VK3NX	Charlie	5
VK3HZ	David	4
VK2ZT	Steve	1 Digi
VK3AXH	Ian	1 Digi
VK3VHF	Rhett	1 Digi
VK5BC	Brian	1

1296 MHz Terrestrial

VK3PY	Chas	39 SSB
VK3QM	David	39 SSB
VK3NX	Charlie	37
VK2ZAB	Gordon	29 SSB
VK3ZLS	Les	26 SSB
VK2KU	Guy	25
VK2DVZ	Ross	23 SSB
VK5AKK	Phil	21 SSB
VK3KAI	Peter	20
VK3BJM	Barry	19 SSB
VK3KAI	Peter	19 SSB
VK3KWA	John	19
VK3BDL	Mike	17 SSB
VK3HZ	David	17
VK3WRE	Ralph	17 SSB
VK3VG	Trevor	12 SSB
VK4KZR	Rod	12
VK2ZT	Steve	11 SSB
VK3BG	Ed	11 SSB
VK7MO	Rex	11 SSB
VK2TK	John	10 SSB
VK3UDX	Geoff	10 SSB
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK3DMW	Ken	7
VK3ECH	Rob	6 SSB
VK3VHF	Rhett	5 SSB
VK3ZUX	Denis	5 SSB
VK4TJ	John	5 SSB
VK5BC	Brian	5 SSB
VK6KZ/p	Wally	5
VK2AMS	Mark	4 SSB
VK4CDI	Phil	4
VK6KZ	Wally	4
VK4CDI	Phil	3 SSB
VK4EME	Allan	3 SSB
VK5BC/p	Brian	3 SSB
VK6DXI	Mirek	3
VK7MO	Rex	3 Digi
VK2FLR	Mike	2
VK3CY	Des	2
VK3KAI	Peter	2 Digi
VK3QM	David	2 Digi
VK4AIG	Denis	2 SSB
VK4CDI	Phil	1 Digi
ZL3TY	Bob	1 SSB

1296 MHz EME

VK3NX	Charlie	29
VK7MO	Rex	27
VK7MO	Rex	24 Digi

2.4 GHz Terrestrial

VK3NX	Charlie	15
VK3PY	Chas	15 SSB
VK3QM	David	15 SSB
VK3WRE	Ralph	11 SSB
VK3KAI	Peter	7 SSB
VK3HZ	David	5
VK4KZR	Rod	4
VK6KZ	Wally	4
VK3BJM	Barry	3 SSB
VK3KAI	Peter	2 Digi
VK3VHF	Rhett	2 SSB
VK2AMS	Mark	1 SSB
VK2DVZ	Ross	1 SSB
VK2EI	Neil	1 SSB
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB

2.4 GHz EME

VK3NX	Charlie	28
VK7MO	Rex	9
VK7MO	Rex	7 Digi

3.4 GHz Terrestrial

VK3NX	Charlie	12
VK3QM	David	12 SSB
VK3WRE	Ralph	8 SSB
VK3KAI	Peter	6 SSB
VK6KZ	Wally	4

3.4 GHz EME

VK3NX	Charlie	11

5.7 GHz Terrestrial

VK3NX	Charlie	12
VK3QM	David	10 SSB
VK3WRE	Ralph	9 SSB
VK3KAI	Peter	7 SSB
VK6KZ	Wally	4
VK3BJM	Barry	2 SSB
VK3KAI	Peter	2 Digi
VK6BHT	Neil	2 SSB
VK3ZUX	Denis	1 SSB

5.7 GHz EME

VK3NX	Charlie	11

10 GHz Terrestrial

VK3NX	Charlie	12
VK3PY	Chas	12 SSB
VK3QM	David	12 SSB
VK3KAI	Peter	9 SSB
VK3WRE	Ralph	9 SSB
VK6BHT	Neil	9 SSB
VK3HZ	David	7
VK6KZ	Wally	5
VK3TLW	Mark	3 SSB
VK2EI	Neil	2 SSB
VK3BJM	Barry	2 SSB
VK3DMW	Ken	2
VK3ZUX	Denis	2 SSB
VK4KZR	Rod	2
VK7MO	Rex	2
VK3BG	Ed	1 SSB

10 GHz EME

VK3NX	Charlie	13

24 GHz

VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK3NX	Charlie	2
VK6KZ	Wally	2

474 THz

VK3HZ	David	2
VK7MO	Rex	2
VK7MO	Rex	2 Digi
VK7TW	Justin	2
VK7HAH	Ben	1 Digi
VK7TW	Justin	1 Digi

Additions, updates and requests for the guidelines to Guy VK2KU.

The guidelines (and the latest League Table) are also available on the VK VHF DX Site at www.vhfdx.radiocorner.net - click on Gridsquares.

Next update of this table will close on or about 5 June 2009.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

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Contests

Phil Smeaton VK4BAA

Contest Calendar for April 2009 – June 2009

April	4/5	SP DX Contest	CW/SSB
	4	QRP Hours Contest	CW/SSB
	4/5	EA WW RTTY Contest	RTTY
	11/12	Japan International DX Contest	CW
	11/12	Yuri Gagarin International Contest	CW
	18	Holy Land DX Contest	CW/SSB
	18	TARA Skirmish Digital Prefix Contest	PSK
	18/19	YU DX Contest	CW/SSB
	18	Harry Angel Memorial Sprint	CW/SSB
	25/26	Helvetia Contest	CW/SSB
	25/26	SP DX RTTY Contest	RTTY
May	9/10	CQ-M International DX Contest	CW/SSB
	9	VK/Trans-Tasman 80 metres Phone Contest	SSB
	16/17	King of Spain Contest	CW
	30/31	CQ WW WPX Contest	CW
June	6/7	IARU Region 1 Field Day	CW
	6/7	VK Shires Contest – Rules next month	All
	13	Asia / Pacific Sprint	SSB
	13	VK/Trans-Tasman 160 metres Phone Contest	SSB
	20/21	All Asia DX	CW
	27/28	King of Spain Contest	SSB
	27/28	Marconi Memorial Contest	CW
	27/28	ARRL Field Day	All

Welcome to this month's Contest Column.

Did you support the VK Team in the 71st Commonwealth Contest?

Well, I tried to, but preparations for WPX rather got in the way with lots of time spent messing about with making the station ready and not enough time actually using it. I wanted, and have wanted for some time now, to compete for a position within the VK Team. Alas, once again this was not to be, as antenna hardware does not leap out of the box and up into the air all by itself, as assistance is required to get it into a position where it can do some good. All I needed was something for HF as LF was already taken care of by existing systems, but I couldn't get the cunning plan to the finishing post unfortunately.

Asking around, it seems that the bands were lively and the winning VK Team score from 2008 was hotly contested by the rest of the world. Hopefully, Team VK has done better than their cricketing counterparts recently!

The Commonwealth Contest is a slightly unique contest as regards multipliers and the requirements from the antenna system. To be successful, sitting on a seemingly lively band and thundering along with a reasonably high Q-rate is not likely to get a maximised score. I even heard one station calling "CQ CC" on 160m one year – the band is not included in the contest! It pays to do some homework prior to the start of the contest to make sure you are up to date.....

2008 IARU HF World Championship Results

Congratulations to the following VK stations appearing in the results listing for the contest.

VK4TT	3,562
VK8FGNT	2,596
VK4EJ	16,809
VK8AV	1,600
VK6AA	505,818
VK3TZ	81,420
VK2GWK	133,812
VK7GN	27,878
VK3KE	12,810
VK4XES	12,006
VK5NPR	3,151
VK7CAV	1,224
VK3EW	28,845
VK2ZQ	5,616
VK2AYD	86,899
VK2GR	25,251

2008 Islands On The Air Results

The contest is based on the IOTA Awards Program and is intended to encourage contacts with island stations. There are also special awards for expedition entrants, to encourage island expeditions over the contest weekend. Competitors may contact any amateur station whether

on an island or not. However, extra points and multipliers are gained by working island stations. It is a mixed mode contest so any stations contacted on CW for example, can also score points if also contacted on SSB. Contacts with island stations score 15 points and contacts with non-island stations score 3 points, so any IOTA islands placed near to highly populated other IOTA islands can score very nicely indeed. I used to enter this contest with a group of like minded blokes from the Isle of Man. It was a highly profitable mode of operation to work into G on 40m as they all scored 15 points per QSO. Finding other (rarer) IOTA islands to try and gain a multiplier was not always as profitable for the scores bottom line. In the Northern Hemisphere the night is shorter as the contest takes place in the middle of their summer, so the maximum use of the LF bands is required during the hours of darkness to gain the highest number of multipliers.

Congratulations to the following VK stations who appear in the results for 2008:

VK6DXI	CW	24H	HP	113904
VK4BUI	MIX	24H	HP	83214
VK5MAV	CW	12H	LP	16422
VK2CCC	CW	12H	LP	13464
VK4TT	CW	12H	LP	7980
VK4FRAJ	MIX	12H	QRP	5778
VK2GR	CW	12H	LP	4704
VK8AV	CW	12H	HP	3555

Claimed Scores for IARU 2008

Callsign	Section	Score
VK4XES	Single Op, Phone Only, LP	13,869
VK5NPR	Single Op, Phone Only, LP	3,288
VK7CAV	Single Op, Phone Only, LP	1,224
VK3EW	Single Op, Phone Only, HP	37,824
VK2ZQ	Single Op, Phone Only, HP	5,994
VK3TZ	Single Op, Mixed Mode, LP	100,800
VK4TT	Single Op, Mixed Mode, LP	4,374
VK2GWK	Single Op, Mixed Mode, HP	154,456
VK7GN	Single Op, Mixed Mode, HP	33,880
VK3KE	Single Op, Mixed Mode, HP	17,108
VK2AYD	Single Op, CW Only, LP	93,599
VK2GR	Single Op, CW Only, LP	31,020
VK8AV	Single Op, CW Only, LP	1,600
VK6AA	Single Op, CW Only, HP	564,108

The results are scheduled to be released soon for the IARU contest, so I will include them here when they are available. Some very good scores were recorded for VK stations, but category entries need careful selection as the contest organisers have a slightly different view on life in this respect – no Single Op Single Band entry.

Alternative contest exchanges

It could be argued that the premier, biggest and most prestigious DX Contest, CQWW, has a very simple and somewhat 'dumbed-down' exchange. There is not a piece of software made that does not automatically assign the zone number based on the call sign prefix. CT, the first major contest logger, had provision for logging RST Sent as anything other than 59(9), but defaulted to 59(9). Since then, and it may also have taken place before of course, the exchange of 59(9) has become largely redundant.

The All Asia contest spices things up a little with an exchange that is not so easy to 'predict', with the report being tail-ended with the age of the operator. It gets even more interesting for multi-operator entries during this contest as working a callsign on a band may result in a different exchange when next worked as the operator has changed and the age is different.

A pseudo random number generator could produce a code which is then exchanged with a participant, but which changes from QSO to QSO. It would stop people listening to a station after their QSO to check that they had got the serial number correct, for example. Making the random code generator into alphanumeric sequences would also remove using cut numbers!

What about trying a methodology adopted for a particular contest in Europe some years ago? The exchange contained a reference to whatever the operator had consumed for his or her tea that evening! I dare say that many operators had PIE or EGG that night and did not bother with TARAMASALATA.

How do you improve?

"How do you get to Sydney Opera House?" the chap asked his cab driver. The reply:

"Practise, practise, practise."

Most people can acknowledge that practice is an important part of learning and improving any skill. Sportsmen and women practise – sometimes for years – to hone their skills. People learning musical instruments practise – often to the utter disdain of neighbours trying to have an early night whilst accompanied by a wailing violin. Very few people are a "natural" who can just pick something up and be instantly good at it. So, it's a bit strange that very little is ever said about practising with regard to radio contests.

Some suggested ways to practise for radio contests that I have been offered over the years:

- Start at the bottom of the band and see how fast you can search and pounce your way to the top. Then go back to the bottom and do it again. The first time is about knowing how to acquire the next signal and dump in your call (or decide to keep tuning). The second pass is the valuable one. It helps you practise call sign recognition, duping skills and how to dig for some goodies between the fast loud signals.
- Work a QSO party or smaller DX contest that is focused on one area. This is good practice for the Commonwealth Contest for example. See if you can work every station you hear from that area. Again, this helps you practise recognising signals from a target area and honing duping skills.
- Work RTTY contests to learn SO2R skills – if you are so inclined. In RTTY, the computer is doing the brain work and the QSOs have a fairly consistent timing and pattern. This frees you to practise the keyboarding skills of jumping between the two logging windows. For an even higher level of practice, try running on two bands at the same time (while never transmitting on two bands at once). The goal is to do it so smoothly that no one listening can tell what you are doing!
- Search and pounce in a contest using low power. Almost everything I learnt about busting pileups (I am still learning I might add!!) came from my early years in ham radio with 10 watts and wires in trees. You take a different approach when you are not the loudest guy in the pileup – and I'm not the loudest now I might add! Learn that different approach and then be

amazed when you apply it while running at full legal output if you are able to use it.

- Get on the air between contests and make some QSOs. Nothing helps your CW sending more than having to think and send at the same time (!)

Use CW simulator software. For getting your feet wet in SO2R without risking much on the air, feed 'MorseRunner' in WPX mode into one ear and the audio of your radio doing SandP into your other ear. You may even create a small 15-minute competition for yourself. Either that or you'll go utterly insane while trying to.

Another thing I have found very helpful over the years is to review and compare rate sheets with competitors. Were you on the right band? If you were, why was your rate better or worse than theirs?

The most obvious answer is indeed practice, practice, and practice. For a week or more before a CW contest, I try to listen to CW callsigns at very high speed – either on the air or using a PC. It helps to reset my clock at a higher level. You do not have to copy at QRQ (although it would help!), just get used to listening to code at those speeds. Then I find it easier to copy when things slow down to 40 wpm or so as compared to not listening to QRQ ahead of time. Maybe it is just me, but give it a try and see if it works for you too.

The other thing to practise is accuracy. It is easy to put "something" down, but is it right? Quality trumps rate 100% of the time. Resist the urge to log it, "no matter what." Asking the other station for repeats is not something to be embarrassed about. Logging a busted call or exchange is only going to lose you points in the end – and possibly gain you a points penalty during the adjudication process. If you are not sure you got it right and you have asked for repeats but get no cooperation, then I suggest you do not log it. Equally, if you are asked for a repeat, take the time to repeat it! If the guy asking for a repeat is sending quite a bit slower than you are, slow down when you give the repeat – he is only likely to ask again otherwise.

There are possibly many ways you can take things from your daily life and work and make them tools for training your mind and body and improving your operating skills. All it takes is a little imagination and creativity, plus effort and having fun.

ANARTS Contest ceases

Pat Leeper VK2JPA regrets to inform everyone that the ANARTS WW RTTY Contest will no longer be held. Pat is unable to do the job due to chronic ill-health and failing eyesight and appeals for someone to take over have had no result after being included in WIA News bulletins. It did not help that very few contestants (they could be counted on one hand) used the correct Cabrillo format for this contest, with the result that there were either no points or CQ zones in almost all logs. The club's remaining function is the weekly news bulletin which is posted on the website. I hope you are on a speedy road to recovery, Pat, and thanks for all that you've done for the contest.

A (not so) hair raising experience

Somewhat late in the printing due to space pressures last month, but Andy Munson VK4HAM is taking part in the Leukaemia Foundation World's Greatest Shave on the 13th of March and is scheduled to have his boyish tufts detached just prior to the John Moyle Contest. The hair removal itself might be beset with turmoil – the 13th is a Friday after all!!

I am hoping that a picture of Andy during his following contesting activities will be made available for printing in AR at a later date to see if he has three sixes hidden on his scalp. It would explain a lot! If you hear Andy on the bands then give the bloke a shout. Andy might try and sell you a second-hand hair dryer or a comb, but resist the urge to part with any money – unless you want to sponsor him of course!

This and That

Ed W2RF is developing a CW Skimmer application called RigSync that integrates output from the automated decoder with the WriteLog logging software. RigSync works with both Windows XP and Vista, so it should run on whatever reasonably modern PC you have. The software seems relatively benign to use so even the hard of thinking (me) should not have a problem to get it going. It's still early in the development as far as I can ascertain, but we'll see how it goes. Thus far at least, it looks like a handy tool.

If you have any contest related material for inclusion within the column, topics that you'd like covered or even some experiences and pictures you'd like to share, then please feel free to get in touch via vk4baa@wia.org.au. See you on the bands.

73 Phil Smeaton VK4BAA

Summer Field Day 2009: Results

Contest manager: John Martin VK3KM

The Summer Field Day saw a total of 68 logs – not quite equal to the record, but very close. Propagation was variable: some operators reported ordinary conditions but others found that conditions were much better than usual. And many entrants reported high levels of activity. It was also good to see a number of logs from stations entering the contest for the first time.

This time the most unusual feature of the results was two enormous scores by Tim Dixon VK5ZT in Section A and the Elizabeth club VK5LZ in Section C. Their operation could best be described as "extreme grid-hopping". Hats off to them for the enormous effort it would have taken for them to activate so many squares. The runner-up for Section A was Ralph VK3WRE, and in Section C it was the Lara group VK3UHF.

In the eight hour sections, Ralph complemented his second place in Section A with a win in Section B, and the runner-up was Bill VK3LY. In Section D, the winners were the VK3XPD crew, with second place going to the family station VK3ALB, who entered the Field Day for the first time.

In the home station section, top score went to Barry VK3BJM, and the runner-up was Matt VK2DAG.

Congratulations to all. I hope you will all be back for the next event, which will be the second Winter Field Day in late June.

Results table next page

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	TOTAL
Section A: Single Operator, 24 Hours												
VK5ZT	Tim Dixon	PF84,85,86,87,94,95,96,97, QF04,05,06	246	774	1275	1976	2460	1770	2460	2460	-	13421
VK3WRE	Ralph Edgar	QF31	-	306	495	704	680	550	430	440	-	3605
VK40E	Doug Friend	QG50, QG60	-	459	740	664	550	-	-	210	-	2623
VK3ZQB	Russell Lemke	QF11	-	285	350	648	-	-	340	490	-	2113
VK3LY	Bill Day	QF04	137	540	745	672	-	-	-	-	-	2104
VK3JTM	Tim Morgan	QF12	127	402	655	904	-	-	-	-	-	2088
VK3ECH	Rob George	QF23	43	528	655	520	-	-	-	-	-	1746
VK3BBB	Brian Young	QF32	136	645	740	-	-	-	-	-	-	1521
VK3DAG	Steven Hamer	QF32	110	483	625	-	-	-	-	-	-	1218
VK2HRX	Compton Allen	QF44	24	396	345	280	-	-	-	-	-	1045
VK2FABV	Colin Sibraa	QF36	-	735	220	-	-	-	-	-	-	955
VK5AR	Alan Raftery	PF94	62	408	450	-	-	-	-	-	-	920
VK5BC	Brian Cleland	PF85	32	282	175	304	-	-	-	-	-	793
VK4HEC	Ewen Cameron	QG52	21	351	290	-	-	-	-	-	-	662
VK5UE	Colwyn Low	PF95	-	147	280	168	-	-	-	-	-	595
VK1AI	Greg Parkhurst	QF44	28	210	140	-	-	-	-	-	-	398
VK3FASW	Andre Walker	QF21	-	189	-	-	-	-	-	-	-	189
VK2YJS	Julian Sortland	QF56	-	81	-	-	-	-	-	-	-	81
Section B: Single Operator, 8 Hours												
VK3WRE	Ralph Edgar	QF31	-	306	495	704	670	540	430	430	-	3575
VK3LY	Bill Day	QF04	81	402	745	472	-	-	-	-	-	1700
VK3KVB	Barry Maskell	QF23	43	348	455	360	-	-	-	-	-	1206
VK3YFL	Bryon Dunkley-Smith	QF22	45	396	515	-	-	-	-	-	-	956
VK2CU	Justin Lavery	QF59	-	474	450	-	-	-	-	-	-	924
VK3HHJ	Dean Emmins	QF12	57	342	495	-	-	-	-	-	-	894
VK5AGZ	Derek Reuther	PF85, PF95, PF96	-	273	380	168	-	-	-	-	-	821
VK4ADC	Doug Hunter	QG61	119	291	370	-	-	-	-	-	-	780
VK5BC	Brian Cleland	PF85	21	237	165	272	-	-	-	-	-	695
VK5AR	Alan Raftery	PF94	57	291	305	-	-	-	-	-	-	653
VK5NI	John Ross	PF94	47	126	445	-	-	-	-	-	-	618
VK3HV	George Francis	QF31	44	138	400	-	-	-	-	-	-	582
VK4WRC	Ross Colledge	QG62	33	186	240	-	-	-	-	-	-	459
Section C: Multi Operator, 24 Hours												
VK5LZ	Elizabeth ARC (1)	PF84,85,86,87,94,95,96,97, QF04,05,06	254	810	1305	1993	2460	1770	2460	2460	-	13511
VK3UHF	LUMEG (2)	QF21	110	774	1195	1432	980	700	800	1020	240	7251
VK5SR	SERG (3)	QF02	201	1017	1320	1320	620	490	590	660	-	6218
VK3ER	EMDRC (4)	QF22	300	981	1565	1920	-	-	-	-	-	4766
VK3TU	(5)	QF01	61	594	915	1088	630	330	330	530	-	4478
VK1DA	(6)	QF44	95	762	955	616	320	-	-	210	-	2958
VK3MV	(7)	QF32	130	774	770	736	-	-	-	-	-	2410
VK5ARC	(8)	PF94	137	897	1000	328	-	-	-	-	-	2362
VK4WIE	CBRS (9)	QG63	146	663	915	504	-	-	-	-	-	2228
VK2LSB	(10)	QF54	32	1086	215	-	-	-	-	-	-	1333
VK4CZ	(11)	QG51	70	447	420	360	-	-	-	-	-	1297
VK2BTW	Tamworth RC (12)	QF58	66	405	355	184	-	-	-	-	-	1010
Section D: Multi Operator, 8 Hours												
VK3XPD	(13)	QF21	48	354	575	912	660	440	330	550	210	4079
VK3ALB	(14)	QF11	-	489	780	656	-	-	-	340	-	2265
VK3APC	MDRC (15)	QF21	85	264	545	344	-	-	-	-	-	1238
VK3FRC	FAMPARC (16)	QF21	116	369	425	304	-	-	-	-	-	1214
Section E: Home Station, 24 Hours												
VK3BJM	Barry Miller	QF22	99	672	775	984	-	-	-	-	-	2530
VK2DAG	Matt Hetherington	QF56	124	699	805	712	-	-	-	-	-	2340

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	TOTAL
VK3BDL	Mike Goode	QF22	133	537	820	832	-	-	-	-	-	2322
VK3MY	Ross Keogh	QF22	-	405	515	728	580	-	-	-	-	2228
VK4JMC	John McPherson	QG62	60	693	860	-	-	-	-	-	-	1613
VK4CP	Adam Maurer	QG62	79	423	530	480	-	-	-	-	-	1512
VK2DVZ	Ross Barlin	QF68	24	618	470	392	-	-	-	-	-	1504
VK3VFO	Nick Kraehe	QF31	64	702	560	-	-	-	-	-	-	1326
VK4ZDP	David Purkis	QH32	284	354	455	232	-	-	-	-	-	1325
VK3DMW	Ken Brown	QF31	-	321	330	536	-	-	-	-	-	1187
VK2EI	Neil Sandford	QF68	29	510	260	-	230	-	-	-	-	1029
VK5LSB	Simon Brandenburg	PF94	65	420	510	-	-	-	-	-	-	995
VK5ALX	Alex Glinskl	PF86	33	249	335	-	-	-	-	-	-	617
VK3XOR	Craig White	QF22	52	243	260	-	-	-	-	-	-	555
VK1PAR	Al Long	QF44	47	336	170	-	-	-	-	-	-	553
VK1WJ	Waldis Jirgens	QF44	34	264	245	-	-	-	-	-	-	543
VK5OM	Jim Bywaters	QF03	-	231	275	-	-	-	-	-	-	506
VK3KST	Tom Steadman	QF31	28	210	140	-	-	-	-	-	-	378
VK2KTC	Tom Clifford	QF56	59	117	130	-	-	-	-	-	-	306
VK4JAZ	Grant McDuling	QG62	54	138	105	-	-	-	-	-	-	297
VK5NY	Roger Bowman	Check log										

(1) Elizabeth ARC: VK5ZDB Iain Crawford, VK5AHV Will Anthony, VK5AKH Andrew Hall

(2) Lara UHF and Microwave Experimenters' Group: Chas Gnaccarini VK3PY, David Learmonth VK3QM, Charlie Kahwagi VK3NX

(3) South East Radio Group: VK5DK, VK5HMW, VK5XCP, VK5GL, VK5HCF, VK5EE, VK5NC, VK5HDW, VK5KET

(4) Eastern and Mountain District Radio Club: VK3AVV Mike Subocz, VK3QI Peter Forbes, VK3WT Max Chadwick, VK3WWW Jack Bramham.

(5) Bert Gnaccarini VK3TU, Ken Jewell VK3NW/VK3AKK

(6) Andrew Davis VK1DA, Dale Hughes VK1DSH, Andy Sayers VK2AES

(7) Peter Young VK3MV, Gavin Brain VK3HY

(8) South Coast ARC: VK5LA Andy Willis, VK5KBJ Barry Bates, VK5HSX Stef Daniels

(9) City of Brisbane Radio Society: John Morris VK4MJF, Mike Cooper VK4MX, Colin Cortina VK4MIL

(10) Stuart Bayliss VK2LSB, Kirk Mercer VK2FKAM

(11) Scott Watson VK4CZ, Alan Meek VK4WR, Graeme Hope VK4FI, Campbell Watson

(12) Tamworth Radio Club: VK2WJD Lindsay Murphy, VK2FBOZ Cris Perrett, VK2FOG Brian Pearce, VK2VRD Robert Duck

(13) Alan Devlin VK3XPD, Peter Roberts VK3TPR, Michael Coleman VK3KH

(14) Lou Blasco VK3ALB, Nik Presser VK3NJP, Jenni Blasco VK3FJEN, Ingrid Blasco VK3FGRL, Michael Blasco VK3FMIC

(15) Moorabbin & District Radio Club: Ian Morris VK3IFM, Lee Moyle VK3GK, Gerard Werner VK3GER

(16) Frankston and Mornington Peninsula ARC: Roy Seabridge VK3GB, David Roitman VK3LDR, Peter Collins VK3BPN, Brian Rich VK3VBJ.

LATE LOG - One log was unfortunately not received until well after the deadline, when the results had been finalised and certificates mailed out. But the details are included here for the sake of the record, and because the operators achieved a very healthy score.

Station: VK2AWA (Operators: VK2NU, VK2BPL, VK2FHRK, VK2IM, VK2KRM, VK2FIRE) - Section D: 2431 points

FIELD DAY WEB SITE - http://www.wia.org.au/members/contests/vhfuhf/

This site includes the rules for the next Field Day, rules and results of all past VHF-UHF Field Days, cover sheets and scoring tables, plus other information.

Some Comments

VK5ZT

This is a considerable expansion on my Spring field day effort. Preparations took nearly two weeks working all available time on the project and requiring significant equipment constructions. Lucky I was on leave at the time. Despite better reliability I still lost a receiver by Sunday morning and needed to modify the 5.8 GHz radio to improve audio quality.

I carried a full tool kit in the boot, including a Hitachi 100 MHz oscilloscope. 240 V power was available in the car to run one of the receivers (and the CRO if needed). Despite working with 5LZ, there was very little pre-contest testing as I live 150 km from the city!

I commandeered my wife's car, a black 2001 Falcon, for the contest. When it was covered with antenna systems (some attached to the window with double sided tape!) it was often mistaken for a police vehicle, prompting drivers around me to be very speed conscious... until they saw the pink numberplate covers! I drove and worked alone for the duration of the event. An Engel fridge in the boot kept me supplied with food and cool drinks. Well over 1000 km was travelled.

The most challenging part of the event was activating grid square QF06. A quick look at a map will show you it is essentially uninhabited mallee scrub. It was dark as we entered it via about 18 km of corrugated, bulldust covered tracks with roos, rabbits, owls etc making appearances.

Travelling alone over such terrain (the 5LZ team were about 10 km away at the time) was rather daunting. I was in a family sedan running low profile tyres in 4WD country! I suspect the corrugations contributed to the failure of the 3.5 GHz receiver system.

The planning, preparation, expense (in both time and $$$) and the sheer overall physical effort required mean that this is highly unlikely to be done again (at least not by us). I have decided on a less ambitious program for future contests.

VK3DMW

What a fantastic event for all those who played the 24 hours - good propagation, good weather and plenty of stations. Although my log is very small, I managed to add six new squares to my tally and every contact attempted was successful, even from my meagre 70 cm setup (75 W to a vertical colinear). The huge signals from the Mt Gambier group on 2 m, 70 cm and 23 cm were a great surprise.

I thought 23 cm to Mt Gambier from Yarram would be very difficult, but in the end it was easier than falling off a log - and less painful. All in all, a most enjoyable and satisfactory weekend for me, in spite of the many interruptions to radio operations.

VK1DA

This year the field day presented an additional challenge for me because we were scheduled to move house during the week prior to the field day. I managed this by moving the field day equipment to the garage of the new house before moving anything else.

It all sat on the side of the garage and we carried everything else past it for the next week. By the 5th consecutive day of moving boxes of household goods between houses I did not feel too keen on the field day as I was very tired. However Dale VK1DSH was keen to participate and my wife encouraged me to go ahead with the plan as she knows how much I enjoy these events.

I made a few equipment changes this year and I had help from Dale VK1DSH for the whole event. Also Andy VK2AES visited the site from late afternoon Saturday through to mid morning on Sunday. Andy brought his 5 year old son Tom, who at various times went walking in the bush with Andy, sat in the tent watching the radios, and for some relaxation, settled down on the floor of the tent with his Lego. It is a long time since I have had a 5 year old on a field day with me.

On the whole I think interest and support for the event is improving but the use of the suggested calling frequency still causes a lot of problems because of people conducting QSOs on that frequency and in some cases, multiple QSOs for minutes at a time.

VK2DAG

This one seems to have more "Bums on Seats" which is great. There appeared to be no 2 m Es around and from my QTH there was a little inland troppo. There seems to be a lot more 23 cm activity which appears to be a trend. I will have to get 13 cm going right if I want to remain competitive. My 70 cm and 23 cm scores were higher than my 2 m score, so that shows the value of the higher bands.

VK2LSB

We operated from QF54et on the escarpment above Milton/Ulladulla on the NSW mid south coast. This was our first contest and we had heaps of fun and a decent amount of contacts, some personal best distances and learnt miles of stuff. Looking forward to the winter contest.

VK4ZDP

I had a great time with some good openings.

VK5ARC

Conditions were hot, with good conditions in the morning. On both days, we worked into both Victoria, and also Western Australia, on both 2 m and 70 cm. Very enjoyable.

VK3WRE

One of the best microwave events of recent years at my end of the circuit.

VK3XPD

We added a new member to our team this time, Peter VK3TPR in an endeavour to encourage a new operator into uWaves. He had a ball. We were also visited by members of VK3APC, the Moorabbin club operation which we discovered were positioned within 1 km of us. They observed for over an hour, and became so interested in what we were doing on uW, they have invited us to address their club on the subject of "Working the higher bands." Now that is what a FD is all about.

An anecdotal observation: this would have to be the most participated FD we have been involved in. Lots of new stations. That is exciting.

One final comment: There have been endless hours of chatter on the Reflector about the rules. It is our team's belief that the rules are fine, just as they are. They are easy, and new participants find them readily understood.

VK3BJM

Sadly just a home station - my intention was to finish fitting a new 25 W PA to my 2.4 GHz transverter. Then fit the feed horn to the 5.7 GHz dish... then... well, you get the idea - wander between shack and shed, handing out the odd number as time permitted. Ended spending most of the 24 hours in the shack, on the radio.

Loads of activity - conditions variable - seriously good to the SW; not so flash to the NE. Very disappointed not to have managed to work Andrew VK1DA on 23 cm. Best contact - possibly the 23 cm contact with Gavin and the crew at VK3MV on Mt Blue Rag - they had no problems hearing my 60 watts, but I just could not get their report and sequence with their 10 watts, on voice (I got the callsigns on a fluke QSB peak). Gavin went to the key and even then it took 3 or 4 attempts before I got all the digits. That was mighty satisfying.

Though working VK3TU on 23 cm from QF01 to add a new grid locator to the tally was kinda nice, too!

VK3YFL

It was a great event, with plenty of activity and me choosing yet another new location, but deciding to stay put for eight hours rather than grid hopping as I have done in the past. My location was at the Frank Thompson Reserve which is part of the Kinglake National Park. It is good for a west through south takeoff, but I found the going hard to the east and north. Unfortunately it also had a disadvantage of being sandwiched between two commercial two way radio towers and I suffered some interference from that.

I think the next step is computer logging in the field, as I found when doing the log for scoring after the event that I had a couple of duplicates.

While there seemed to be plenty of activity for the field day, there does seem to have been a lack of stations wanting to exchange Ross Hull numbers and so it will be interesting to see the level of logs submitted for that.

Ross Hull Memorial VHF-UHF Contest 2009: Results

Contest manager: John Martin VK3KM

This year Rob Ashlin VK3EK made a return to the contest scene and had a well-deserved win in Section A. Next came Andrew VK1DA and Brian VK2AH. Also noteworthy was Ted VK2ARA – he is not a VK4, yet he was the top scoring station on 6 metres. In section B the winner was Waldis VK1WJ, followed by Barrie VK6ADI who also made a good showing in Section A as the sole VK6 entrant. Congratulations to all.

This year's contest was an experiment. For most of the sixty years since the contest's inception, scoring has been based on distances worked – except for several years in the late 1980s when it was based on locator squares. The contest enjoyed strong support for most of its history, but it has been in the doldrums since the late 1990s. So this year the scoring system was changed to see whether a locator-based scoring system would result in greater interest.

An advantage of locator-based scoring is that it isn't necessary to estimate the distance worked for each contact, and this makes it easier to maintain a log. Another advantage is that the Maidenhead locator system is now very well known, especially as it is also the basis for the Grid Square Award and the scoring for the VHF-UHF Field Days.

But locator based scoring has some disadvantages for a DX contest. The main one is that each locator is worth the same score regardless of how far away it is. So the new scoring system doesn't fully reward contacts made well outside one's normal working radius. It can also tend to put a cap on the level of activity because new grid squares are worth ten points, but there is only one point for new stations in squares that have already been worked.

I have always believed distance based scoring is the most appropriate for this contest. But levels of activity have been very low, and I felt that it was necessary to try something different.

Has the change of scoring system helped create more activity? The jury is still out. There has been a 50 per cent increase in the number of logs this year, but activity levels are still very low compared with the heyday of the 1990s. So, for the next contest, there are several decisions. Is it reasonable to give the locator-based scoring another chance? And what of Section B? These questions, and others, will have to be considered over the coming months. I'd welcome any comments or suggestions.

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Call	Name	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	TOTAL
Section A: All Bands										
VK3EK	Rob Ashlin	411	948	1040	800	490	220	220	220	4349
VK1DA	Andrew Davis	51	627	825	496	220	-	-	-	2219
VK2AH	Brian Farrar	492	639	545	-	-	-	-	-	1676
VK2ARA	Edward Thrift	510	621	405	-	-	-	-	-	1536
VK2TG	Robert Demkiw	35	633	405	-	-	-	-	-	1073
VK6ADI	Barrie Burns	497	279	180	-	-	-	-	-	956
VK4JAZ	Grant McDuling	169	186	220	-	-	-	-	-	575
VK3HV	George Francis	60	117	305	88	-	-	-	-	570
VK4LW	Ricky Chilcott	151	69	110	-	-	-	-	-	330
VK4ZJ	Rodney Webb	-	186	-	-	-	-	-	-	186
VK3XOR	Craig White	68	33	55	-	-	-	-	-	156
VK4TGL	Gerard Lawler	14	54	85	-	-	-	-	-	153
Section B: Digital modes, All Bands										
VK1WJ	Waldis Jirgens	-	183	-	-	-	-	-	-	183
VK6ADI	Barrie Burns	47	-	-	-	-	-	-	-	47

World Amateur Radio Day 18 April 2009

IARU International Coordinator for Emergency Communications

Amateur Radio: *Your Resource in Disaster and Emergency Communication*

While the International Amateur Radio Union (IARU) has made its contributions to emergency and disaster response ever since its beginnings in 1925, this role has gained a lot of importance just in the recent past.

It has at its disposal:

- A large number of very flexible and mostly infrastructure-independent, local, national, regional and global networks, and
- A large number of skilled operators, who know how to communicate with often very limited means and to establish communications under the most difficult circumstances.

When disasters occur where there is not good coverage by public networks, or when existing communications infrastructures have just been disrupted or destroyed by such events, the IARU provides communications for rescuers, relief organizations and for those affected by the disaster.

This is why more and more amateur radio operators, through their clubs and their national societies, prepare very seriously for their role in emergencies.

However, their skills can be put to use only if they are known by other first responders such as search and rescue, medical resources and those who can provide food and shelter.

Activities on World Amateur Radio Day 2009 is a great opportunity to spread the word about what "hams" are doing.

Hans Zimmermann F5VKP/HB9AQS

AMSAT

David Giles
vk5dg@amsat.org

Paul Paradigm VK2TXT finds that he is now not in a position to continue his contributions to the AMSAT column in AR. Thank you Paul for your work over the past few months. This month's contribution comes from David VK5DG. I understand that David will tell us all a little more about himself in the May column. Welcome aboard David.

Peter VK3KAI (Ed.)

DO-64 Delfi-C3 Back in science mode

After three months of testing in basic mode, recovery of the transponder on DO-64 has not been successful. The command team at the Delft University of Technology in the Netherlands have decided to put DO-64 back into science mode. The 1200 baud BPSK downlink is now being transmitted on the primary frequency of 145.870 MHz. DO-64 may transmit on the secondary frequency of 145.930 MHz.

Unlike basic mode where the downlink was heard on every pass, in science mode DO-64 has a tendency to shutdown during most orbits. This means it is usually silent by the time it gets over VK/ZL. However the command team are still interested in getting any telemetry. In the 10 months DO-64 has been in orbit over 72 MB of telemetry has been collected.

Recently the RASCAL demodulating and decoding software has been updated to version 1.1.0. This latest version scans the audio from 900 Hz to 2300 Hz. I have found it to lock onto and decode DO-64's signal much better than previous versions. If you are using an older version, you only need to download an upgrade patch.

More details can be found in DO-64's homepage at www.delfic3.nl

Old dog teaches new tricks

AO-7's elusive 70 cm beacon has been heard. In early March several stations posted on the AMSAT bulletin board that the 435.106 MHz beacon was sending telemetry using RTTY with an 85 Hz shift.

This is unusual for several reasons. It is rarely heard at all and can only come on when the more popular 70 cm/2 m transponder is turned off. According to the Radio Amateur Satellite Handbook the power output dropped from 400 mW to 10 mW in 1975. According to the telemetry the output power was 285 mW. Also the other CW telemetry beacons have usually been off during the current non-eclipse period.

Some telemetry was decoded using a table from the December 1974 AMSAT

AMSAT-VK

AMSAT Co-ordinator: Paul Paradigm VK2TXT,
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Group Moderator: Judy Williams VK2TJU
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Website: www.amsat-vk.org Group site: group.amsat-vk.org

About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

In South Australia

VK5TRM Loxton on 147.125 MHz

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-VK HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

newsletter recently scanned and made available by Phil Karn KA9Q. Analysis shows that AO-7 is in good shape for its age. Most of the 60 channels of telemetry were within specifications. All of the solar panels are producing current, the voltage regulators are regulating properly, the temperature sensors may be faulty and the 4.997 V calibration reference is reading 5.01 V.

An email from Mike N1JEZ AO-7 command operator stated, "This is pretty significant. Every time I have tried to activate the RTTY system, all I would get is a solid carrier then the bird has reset indicating a lack of power. I wonder what might have changed?"

JAXA launches 8 birds

On 23rd January, the Japanese Aerospace Exploration Agency (JAXA) launched eight satellites. Five of these are of interest to amateurs. Three have been heard and telemetry decoded by amateurs, one has remained silent and the other has not yet been commanded for amateur use. They are not CubeSats but range from 3 to 50 kg.

PRISM was built by the University of Tokyo's Intelligent Space Systems Laboratory that gave us the CO-57 (Xi-IV) and CO-58 (Xi-V) CubeSats. The 8 kg satellite's primary mission is to extend a boom with a lens for its camera. It is hoped to photograph the Earth with a resolution around 10-30 metres per pixel. PRISM currently transmits CW telemetry on 437.250 MHz. In the future an uplink frequency and mode will be published that will allow amateurs to communicate through it.

STARS is actually two satellites tethered together. Designated as "Mother" and "Daughter" they are transmitting CW telemetry on 437.305 MHz and 437.275 MHz respectively. The main mission is to deploy the tether and photograph the process. Both satellites have a camera.

KKS-1 (Kouku-Kousen satellite-1) was built by the Tokyo Metropolitan College of Industrial Technology and will demonstrate a laser ignited thruster micro-propulsion system and 3-axis attitude control system. It has been transmitting a set of six preset messages using CW on 437.385 MHz. The CW beacon may be set to send other information.

Kagayaki has remained silent since launch. Amateurs are encouraged to listen on 437.375 MHz for signs of life, either the CW beacon or 9600 baud downlink. Best estimate is that the object with NORAD number 33495 is Kagayaki.

Sohla is a 50 kg satellite. Currently it is still being commissioned. Its primary mission is to study lightning. None of the amateur radio operations have been activated yet.

PRISM, STARS and KKS-1 control stations are keen to obtain reception reports.

Details of these satellites and all the CubeSats can be found at http://showcase.netins.net/web/wallio/CubeSat.htm

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Silent Key

Len Mostert VK3LM, VK3UH (formerly VK3DLM)

02/07/1947 – 02/01/2009

Len's interest in amateur radio was sparked when he and Peter VK3TT (current call) would visit Ron Jardine's VK3PR shack at Leongatha in the 1970s. It was not too long before Len obtained his Novice licence in around 1978 and eventually moved onto a full call.

Len was an avid antenna constructor, experimenting and constructing different designs of VHF and UHF beams with precision construction.

His passion was 6 m and 2 m sideband and he made many contacts on these bands. Len participated in many contests and would head out into the hills around Korumburra setting up his portable station. Testimony of that was the winning of the Ross Hull Memorial Contest in 2005. He was very proud of that achievement, with his certificate proudly displayed on the shack wall. Another of Len's interests was satellites, tracking them on his computer.

Over the years Len worked many contacts near and far. His regular weekly contact with fellow amateur Dick VK3PF (previously VK3DDS) over thirty years is testimony of his friendly nature towards other amateurs and will be missed by us all.



Len and Thelma's enjoyment of country music would take them to the Mildura Country Music Festivals where they would meet up with the Mildura Amateur Radio Club members. Dinners, barbeques and visiting QTHs were great social events.

Len's precision construction skills were demonstrated by the model aircraft he built and flew, especially gliders and his helicopter. Model aircraft were Len's second hobby passion, after amateur radio, having been involved for at least forty years and having won state championships at flying competitions.

Len also enjoyed fishing, which he shared with his brothers and later his children.

As if this were not enough, he showed his meticulous nature through his home brew beer and even took out a national award for one of his brews.

Len will be missed by all who had the pleasure of knowing him, regardless of the field of endeavour through which they met.

Len leaves behind his wife Thelma, children Michelle, Shane, Narelle and the extended family.

submitted by Peter Little VK3TT

DX - News & Views

John Bazley VK4OQ
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352. Email: john.bazley@bigpond.com

The DX community worldwide has recently lost an internationally known amateur, Jim Smith VK9NS, who passed away peacefully on Norfolk Island on the 10th February after a short illness.

First licensed in 1947 as VS1BQ (Singapore), for over sixty years Jim operated under a large number of call signs and from many countries around the world, including, at the time, new and rare DXCC entities and IOTA groups (A35MR, A51JS, A52JS, H40AB, S21ZA, T31JS, T33JS, VK0JS, VK9WW and W1RZ/KH9, just to name a few). Jim's inestimable contribution to DXing was acknowledged in 1986, when he was inducted into the CQ DX Hall of Fame.

So what have we to look forward to in the coming months, following the KP5 Desecheo operation?

Fernando de Noronha. Fabio PY2AAZ, Anderson PY2TNT, Alex PY2WAS and Bob N6OX will be active as ZY0F from Fernando de Noronha (SA-003) from around 2300 UTC on June 10th through around 1300 UTC on the 15th. Expect activity on 160-10 metres CW and SSB, plus 60 m under a special licence granted by the Brazilian authorities. QSL via PY2WAS, direct or bureau.

Pacific Tours. Hrane YT1AD and David K3LP are planning two DXpeditions to three DXCC Entities: **Tokelau** (ZK3), **Central Kiribati** (T31) which will take place in either April or September 2010, and **Conway Reef** (3D2C) in late September 2011. In order to organize these operations, Hrane and Miki YU1DW will be travelling to a few South Pacific islands between April 20th and May 7th this year, and activate the following Entities:

April 22	Samoa	5W8A (YT1AD) and 5W0DW (YU1DW)
April 22 - 24	American Samoa	KH8/N9YU (YT1AD)
April 25	Fiji Islands	3D2AD (YT1AD) and 3D2DW (YU1DW)
April 27 - 29	Western Kiribati	T30M (YT1AD) and T30DW (YU1DW)
May 4	Fiji Islands	3D2AD (YT1AD) and 3D2DW (YU1DW)

More information will be available at http://www.yt1ad.info/t31

Western Sahara. A multi-national team of ten operators (namely EA1CJ, EA1KY, EA2RY, EA3EXV, EA5RM, EA7AJR, F9IE, IN3ZNR, UT7CR and UY7CW) will be active as S04R from Western Sahara from April 12th to the 17th. They will operate SSB, CW and digital modes on 160 through to 10 metres with at least three stations. The pilot station will be EA5BZ. QSL via EA5RM. Further information is available at http://www.dxfriends.com

5R8KDJ will be in **Madagascar** between July 6 and 17, including the IARU contest. He will be on CW and RTTY, 160-6 m. QSL via W5KDJ.

Mellish Reef. AA7JV and HA7RY (they operated from Willis Island in October 2007) will be active this time as VK9GMW from Mellish Reef (OC-072) between March 22nd and April 6th (dates may change due to weather). This will be "another low-key, simple DXpedition", with a strong focus on the low bands.

They have a new 160/80 antenna they expect will increase their effectiveness on those bands. (although George and Tomi intend operating on all HF bands). QSL direct to HA7RY. The logs will be uploaded to LoTW. Please visit http://www.vk9gmw.com for further information, including detail on how to contribute to the DXpedition. It is a 900 km voyage from Australia to Mellish Reef.

The two operators will be taking with them a K3, an IC-746 Pro, and two solid state amplifiers, all running from a single 1-1/2 kW Honda generator to four 12-volt car batteries. QSL only via HA7RY direct, Tamas Pekarik, Alagi ut 15, H-1251 Fot, HUNGARY. Include $2 for up to three cards per envelope to cover postage. HA7RY would rather you not send IRCs; he says they are difficult to use. Card design and printing will take about six weeks after the operation.

Lord Howe Island. VK4FW advises that all theVK9LA equipment sent via the ship has safely arrived.

Frequencies of operation.

	SSB	CW	RTTY
160		1.813u/d	
80	3.797 u/d	3.513 u	
40	7.084 u	7.013 u	
30		10.106 u	10.135 u/d
20	14.250 u/d	14.023 u/d	14.088 u
17	18.165 d	18.072 u	18.100 u/d
15	21.290 u/d	21.023 u/d	21.088 u/d
12	24.987 d	24.892 u	24.925 u/d
10	28.470 u/d	28.023 u/d	28.088 u/d
6	50.100 u/d	50.100 u/d	

Notes:

1. u/d: Up or down
2. 6 m: Call us when the beacon goes into RX mode.
3. 40 m: RX for the Americas will be above 7.150
4. 80 m: A special time on April 1 has been set up to work the VK and greater Pacific (see www.odxg.org/vk9la.htm for details). We would request that these areas do not call us in the pile ups on 80 m before this event.
5. Pilot Station: Don N1DG will be our only pilot station.
6. VK4FW will arrive Sunday 22nd. With unpacking and sorting equipment he might get on air Sunday evening local time. On Monday four more of the crew arrive and will begin further assembly. We will try to get two stations on air ASAP. On Tuesday, when the rest of the crew arrive, we will finish assembly and get all stations on the air ASAP.

QSLing procedures

1. Direct via VK4FW
2. via the buro via VK4FW
3. OQRS (www.odxg.org/qsl.htm) direct or
4. OQRS (www.odxg.org/qsl.htm) buro

Randy N0TG and friends are planning a trip to **Sable Island, CY0**, from October 7th to the 14th, 2009. N0TG/CY0, WA4DAN/CY0 and AA4VK/CY0, Randy, Murray and Ron, have started a web site, www.CY0dxpedition.com They plan to have three complete HF stations using three Butternut verticals.

They think that verticals will be perfect since the island is sand and completely surrounded by saltwater. They hope to be on all bands, 160 m to 10 m, SSB and CW. Looking back at their 1996 CY0XX operation in October of that year, they decided October was just about the optimum month for propagation. They will emphasize openings to Asia, where Sable is ranked #10 most needed in Japan. They will experiment with having two stations on 20 m at the same time.

Robin L. Harwood VK7RH

HJT and other nasty infections

I have just had a frustrating 90 minutes trying to get a persistent virus or Trojan off my computer. I have been running several programs to identify this intruder, which automatically pops up with my mail client. This annoys me especially when I am caught up doing important work. The offending intruder seems to be "HijackThis" or HJT and from what I have read is a hidden program to write junk emails under my own email address. Oh for the days when we did not have viruses or Trojans and we did not need so much antivirus software to keep our computers free from nasties. I have even heard about a Russian antivirus program that took off offending intrusions, only to infect it with its own viruses.

At the end of March, there were further reductions in worldwide shortwave broadcasting. More are opting to put their programs out either as podcasts or streaming audio. Of course, shortwave broadcasts will continue for quite some time, particularly to Africa where Internet usage is very low or non-existent. The wisdom of local placement of international broadcasts via FM seemed promising but ran into difficulties when governments became extremely jittery at coverage of domestic news they preferred not to have been aired. The result often is these FM relays were closed or new regulations brought in to stop local stations relaying foreign broadcasts.

Sri Lanka has relayed the BBC for many decades but in February, newscasts were suddenly interrupted with frequent dropouts, especially when items were aired on the government offensive against the Tamil Tigers. There has been an ongoing civil war for over 30 years and recently the Government got the upper hand, routing the Tamil rebels. The BBC complained at this censorship and London terminated the contract with the SLBC.

In last month's column, I stated that the Obama Administration has given TV stations a few months extension on analogue broadcasts, because there were still six million people who had yet to acquire set-top decoder boxes for digital TV signals. However on the previously scheduled date of February 17th, over 200 stations turned off their analogue signals. Fortunately here in Australia we will have a phased period of analogue TV shutdowns with Mildura scheduled to be the first to do so in 2010.

I have noted Jakarta on shortwave in English at around 1300 on around 9526. Propagation varies widely from day to day, as does the frequency. It is a pity that their external service, the Voice of Indonesia is so difficult to hear, compared to the ease of hearing provincial stations on the 60 and 90 metre tropical allocations.

Well that is all for this month. Please send me your news to vk7rh@wia.org.au

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DX News & Views continued

Chris ZL1CT will be active as ZK2V from **Niue** (OC-040) between the 16th May and 20th June. His five week expedition aims to give as many stations as possible their first QSO with ZK2. Resources are limited, and he will operate mainly on 80, 40, 20 and 15 metres CW, SSB and RTTY with some activity on 30, 17 and 12 metres. QSL via N3SL. A log-search will be available at http://www.gm7v.com/zk2v.htm, Chris plans to update this frequently.

A team of seven members of IOCA Group (Franjo/9A2MF, Daki/9A2WJ, Boki/9A3KB, Dado/9A3TA, Emir/9A6AA, Sven/DF9MV and Matt/DL5MFL) will be active as 9A0CI from **Vela Palagruza Island** (EU-090, CI-084) and lighthouse (LH-0057, CRO-012) from May 8th to the 16th.

They will operate SSB, CW and digital modes on 10-80 metres. QSL via DE0MST, direct or bureau. They also plan to operate SSB as 9A/homecall and homecall/p from **Mala Palagruza Island** (EU-090, CI-461) and from the islet of **Kamik Od Tramuntane** (CI-960, new one for the IOCA programme). QSL via home calls. Further information will be available on http://www.inet.hr/9a6aa/iocaplan.htm

AP2ASHF (the suffix stands for Axel Helmut Scholz, Foreigner) is the callsign issued to Axel DL7UPN. He expects to visit **Pakistan** "several times" before June and to operate CW, RTTY and PSK. QSL via DL7UPN.

Patrick F4EBT will be active as FG/F4EBT from **Basse-Terre, Guadeloupe** (NA-102) from March 21st to April 11th. He plans to operate holiday style on SSB.

Look for JD1BLK (QSL via JM1LJS), JD1BMH (QSL via JG7PSJ) and JD1BLY (QSL via JI5RPT) who will be active from **Chichijima** (AS-031), **Ogasawara** from April 29th to May 12th. They plan to operate CW, SSB and digital modes on 160-6 metres, plus satellite. Log searches and further information will be available on their individual websites:http://radio-dream.com/jd1blk/e/ (JD1BLK), http://sapphire.ganko.tohoku.ac.jp/jd1bmh/ (JD1BMH) and http://www.ji5rpt.com/jd1/ (JD1BLY) [TNX JI5RPT].

R1ANB, with Nick RW6ACM (ex R1ANL) operating, is on from the **Russian Antarctic station Mirny**. He likes both CW and SSB on HF. He will be there for the next few months. QSL via RN1ON direct or bureau.

B1Z in **China** will be in the CQ-M Contest May 9th to the 10th, with N1UR operating. Ed will be using CW and SSB on all bands including 160. QSL information yet to be determined.

Good luck in the pile-ups.

Special thanks to the authors of The Daily DX (W3UR) -- 425 DX News (I1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two week trial of The Daily DX from www.dailydx.com/trial.htm

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VHF/UHF – An Expanding World

David Smith VK3HZ
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Weak Signal

David Smith - VK3HZ

After all the activity over the last few months, the latter part of February and early March has been very quiet.

The bushfire disaster in Victoria has also seen many people diverted from amateur radio activities to much more important tasks. Most of us in this region have been touched in some way by this disaster and it is hoped that we learn some important lessons from this to avoid such a thing happening again.

So to reports of propagation conditions. The last reported contact from VK to ZL occurred on the evening of February 8th, from Gary VK2KYP to Bob ZL3TY on 2 m. After a frantic December and January, Bob is probably enjoying the rest!

In the middle of February, tropo conditions opened across the Bight between Adelaide and VK6. On the evening of the 14th, Phil VK5AKK worked Wally VK6WG on 2 m and 70 cm. The following morning, Bill VK5ACY and Brian VK5BC also worked Wally on 2 and 70. That evening, Brian again worked Wally on 2 m, 70 cm and 23 cm (5x1 report). A little later, on the evening of February 21st, Colin VK5DK in Mt Gambier worked Bob VK6BE in Albany on 2 m. However, the season's first Melbourne to VK6 tropo contact is still proving elusive.

One area where significant DX sometimes gets overlooked by us "southerners" is within VK4 itself. Good tropo conditions often occur up along the coast, and when you consider that the distance from the VK2/4 border to the tip of VK4 is about 2300 km, then some quite substantial intrastate contacts can occur. John VK4JMC reports on just such an opening:

On March 3rd and 4th, tropo openings occurred from Brisbane extending to Far North Queensland. The first reports posted on the logger were of the VK4RTT beacon being heard in FNQ at 1900Z. On both days I was able to work VK4ZDP (1310 km), VK4FLR (510 km), VK4BEG (1340 km), VK4BKP (795 km) and VK4FNQ (1045 km) with signal reports ranging from 5x1 to 5x9. North Queensland stations were also worked by VK4BG and VK4XRA.

Colin VK5DK in Mt Gambier reports on the activities in his part of the country over the summer period:

Conditions have been very good during January and early part of February in the SE of South Australia.

On January 7th from 2315 Z, there were some very good backscatter signals on 50 MHz indicating that there was a possibility of Es on 144 MHz so a close watch was kept on 144.100 MHz. At 2340 Z, VK4DD (5/9) was worked and over the next hour the following stations were worked VK4APG (5/9), VK4TJ (5/9), VK4DH (5/9), VK4ACE (5/9), VK4AFL (5/9), VK4EME (5/9), VK4ADM (5/7), VK2JHN (5/7), VK4ZO (5/1), VK4ZJ (5/7), VK4ZBH (5/9) and VK4ALH (5/9). Signals were generally very strong over the entire hour.

The South East Radio Group went portable for the Summer VHF/UHF Field Day (17th and 18th January) to our usual hilltop and entered the 24 hour multi-operator section under the Club Callsign VK5SR. Conditions were extremely good for all bands and a total of 325 contacts was made over the 24 hours on bands from 50 MHz to 10 GHz. Contact tallies were as follows: 50 MHz (31), 144 MHz (119), 432 MHz (84), 1296 MHz (45) 2.4 GHz (12), 3.4 GHz (9), 5.7 GHz (9) and 10 GHz (16).

The most memorable contacts were the seven VK6 stations worked on 144 MHz on a tropospheric opening to Perth on the Sunday morning. Stations worked were VK6ZWZ, VK6HK, VK6KXW (Beverley) (worked on 70 cm as well), VK6ZKO, VK6OX, VK6KY and VK6WG (Albany). The other good contacts were on the microwave bands to VK3WRE and VK3ZYC portable on Mt Tassie in Gippsland - a distance of 530 km with contacts on 2.4 GHz, 3.4 GHz, 5.7 GHz and 10 GHz with very good signals on all bands.

On the morning of 27th January, signals were very good in the NW direction with Graham VK5KGP and Geoff VK5GF both in the Victor Harbour area, being worked on 1296 MHz with S9 signals on SSB. Also Alan VK3XPD in Melbourne was 5/5 on 1296 MHz.

There was another Es opening to VK4 on the 30th January on 144 MHz at 0010 UTC with John VK4FNQ (5/5), followed by Ray VK4BLK (5/3) and VK4LMB (5/8) before a Fire Call took me away from the opening. Tony VK5ZAI at Kingston S.E. also worked several stations in the VK4 call area on 144 MHz.

On the evening of February 3rd, conditions were again very good both in the Adelaide and Melbourne directions with several contacts being made on 432 MHz and 1296 MHz. Of note were the contacts on 1296 MHz with Peter VK5PJ (5/4) Michael VK3KH (5/9) Charlie VK3NX (5/9), Brian VK5BC (5/1) Garry VK5ZK (5/4) and Ross VK3MY (5/9). Ross VK3MY was also copying my signal on 2403.100 MHz (40 watts), but I was unable to copy the 1 watt signal from Ross. The following morning 4th February, conditions were extremely good on 144 MHz, 432 MHz, 1296 MHz and 2.4 GHz with the following stations worked: VK7JG (5/9 on 144 MHz), VK3DUT (5/9 on 144 MHz), VK3ZRT (5/9 on 144 MHz), VK3AXH (5/9 on 144 MHz, 5/9 on 432 MHz, 5/9 on 1296 MHz and 5/9 on 2.4 GHz), VK3YNB (5/9 on 1296 MHz), VK3XPD (5/9 on 144 MHz, 5/9 on 1296 MHz and 5/8 on 2.4 GHz), VK5ZK (5/9 on 144 MHz and 1296 MHz), VK7AC, VK3ESE, VK3XQ, VK3DMW, VK3TPR, VK5GF, VK5ATW all (5/9 on 144 MHz).

The contacts on 2.4 GHz are my first contacts from my home QTH into Ballarat and Melbourne. Power run from this QTH on 2.4 GHz is 40 watts into a 25-element Yagi mounted up 16 m on the tower and fed with LDF550 Heliax cable.

Summer VHF/UHF Field Day

The Summer VHF/UHF Field Day has been run and won (results elsewhere in this issue) with a very high level of participation in this (VK3) area of the country and excellent conditions to match.

Tim VK5ZT (First in Section A – Single Op 24 Hours) threw himself headfirst into the contest:

When the contest results are released I am sure there will be great discussion concerning my score and how it was achieved. This time last year I had never heard of maidenhead locators - I was away from the AR scene for around 10 years.

I spent 2 weeks building the equipment I needed, while on annual leave. I dare not tell my wife what was spent overall. I commandeered her black 2001 Falcon sedan for the event - that caused enough angst.

I spent 2 days equipping the car for the event - luckily she was away and could not see what I did. The car was equipped with transceiving equipment for ALL BANDS from 6 m to 3 cm. Waveguide and other antennas were taped to windows, bolted to the tow bar or on a magnabase. An equipment rack was installed over the passenger side seats. An inverter supplied mains power. A laptop took care of the scores and two GPS systems helped navigate and locate grid boundaries.

An Engel fridge ran in the boot to supply cold drinks and pre-prepared food. Spares and a full toolkit were also in the boot, including a 100 MHz oscilloscope!

I drove and operated the entire contest alone in the car - there really was not much room for anyone else anyway.

I operated with a local radio club team who were similarly equipped. We covered over 1000 km. While the resulting score was spectacular (11 grid squares activated and 13421 points total), we will not be doing it again! I stopped at a garage 50 km from home (Snowtown, SA) and stripped the car so my wife would not have a heart attack when I got home!

Sure, we won't be doing it again - but that does not mean we won't make a determined effort to win again.

EME activity at VK5MC

Chris VK5MC near Millicent has been working for some years on construction of a large EME dish. The dish project was taken over from Eric VK5LP, a long-time author of this column. Chris writes:

On January 3, 2009, Eric VK5LP saw the EME antenna that he started to build in early 1980 become a reality. Now living in a nursing home at Meningie, he was given the medical okay to make the 300 kilometre trip to the QTH of Chris VK5MC. He is the patron of the South East Radio Group and some of the members were also present to welcome him.

The antenna that Chris VK5MC has finally finished is a 9.8 metre (32 feet) parabolic dish with an F/D of 0.45, computer tracked by a VK5DJ beam controller. Some of the techniques used by Chris in the construction of the antenna will be given in a discussion paper this year at GippsTech.

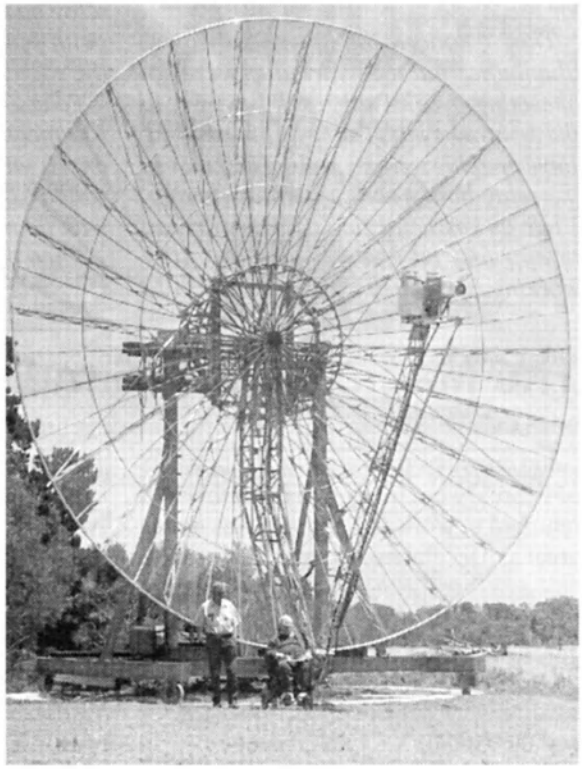
Equipment on 1296 is a MiniKits transverter and sequencer to a 2C39 water cooled N6CA amplifier giving 65 watts out, preamplifier used at the W2IMU dual mode feed is a G4DDK 23 cm preamp.

Doug VK3UM was on 1296 MHz for the occasion and was contacted on EME firstly on CW receiving a report of 549 from Doug and hearing him 559. Contact was then made on SSB with reports of R5 S3 and R5 S5 respectively.

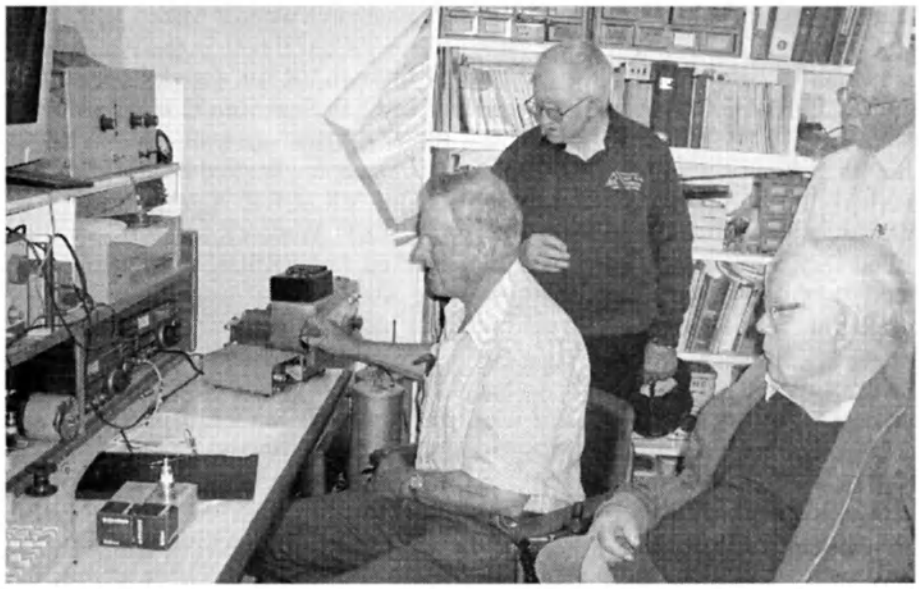
Later in the afternoon VK2JDS was decoded calling CQ using JT65C, and signals from our sched with VE7BBG in Vancouver, Canada were heard and seen on the waterfall display but no decodes could be made.

VK3UM EME

Doug VK3UM was right in the middle of the worst area of bushfires in the state. By some miracle, and a lot of



Chris VK5MC and Eric VK5LP in front of the 10m Dish



L-R: Chris VK5MC, Ian VK3NBL, Eric VK5LP and John VK5JA

hard work, he managed to come through relatively unscathed, even though the fires were licking at the outer edges of his property.

Just prior to the bushfire disaster, Doug managed to get in some EME operation, although not without some trials. Doug reports:

After six days of over 43 deg heat, I will gladly swap for the overcoats in the northern parts of the world. I had a sked with VE2ZAZ. I tipped the dish over and went Auto track. It found the Moon then at 1 deg and I sat back and waited for sked time.

Then I noticed the up indicator was illuminated but the hydraulics were not operating. Gosh I said and drove out to the control system and confirmed the slave up relay was not pulling in. I moved the relay board and it started working. I left an artificial finger (screwdriver) in situ and resumed operation. After working Bert on 70 cm, I switched to 23 and ZL1WN returned with a good signal. We did not complete however, then VE7BBG called and we had an excellent QSO, the first with Cor in decades!

I went back into the searing heat to find the problem with the elevation drive relay board. It turned out to be a crack in a track on the vero board I used for the relay drivers. (I hate the stuff but it is quick and easy to use). The track was the one on the very edge of the board and had "horse-shoed" up from the board as the end of the board had warped in the heat. This caused the track to crack. This relay board was firmly fixed in 4 places (with screws) so it could not move, but the edge did and it bent!

I came on briefly during the start of the European window and worked UA3PTW on 70 with a huge signal as always. I called CQ for half an hour on both bands with no response and gave up.

Then the fires broke out ...

Beacon News

Mark VK2XOF reports that the VK2RSY 2 m beacon at Dural is back on air on 144.420 MHz CW.

The transmitter is running 20 W and is locked to an ovened crystal oscillator so the frequency stability should be a few Hz. The antenna is a pair of crossed dipoles on the roof of the Dural transmitter building.

In the future when other building works are completed, the intention is to move the beacons to the top of one of the 20 m poles.

The beacon on 6 m (50.289 MHz) has also been upgraded with a new transmitter now running 20 W and also locked to a crystal oven.

The 70 cm and 10 m beacons are the next projects starting shortly.

Any reports would be welcome.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

ar

The Magic Band – 6 m DX

Brian Cleland VK5BC

Good openings continued in the first half of February but many 6 m operators had returned to work and activity was not as great as December/January. The second half saw conditions almost completely disappeared with only the odd report of a beacon being heard.

On the 1st Feb Paul A35RK worked several VK4s and heard the FK8 beacon and the Hobart VK7RST beacon.

The 2nd Feb saw Brian VK4EK in Sapphire Central Queensland work several VK5s including Col VK5DK in Mt Gambier, Alex VK5ALX in Whyalla and Brian VK5BC/p Corny Point.

Rod ZL3NW in Christchurch worked Brad VK2GWB and Brian VK2AH on the 4th February while Norm P29NB worked into northern VK4 and Brian VK4EK worked ZL2ASF.

February 5 was a very good day, the band opening between all of the eastern states plus VK5. Early it was mainly VK4 to VK5 then moving down to VK2 with VK7 and VK3 getting in the act later in the day. Kerry ZL2TPY was hearing several VK beacons plus the FK8 beacon all day. Norm VK7AC in Launceston worked several VK2, 4 and 5 stations.

On the 7th Feb Rod ZL3NW Christchurch worked John VK2BHO and Peter VK2ZTV while Scott VK4CZ Brisbane worked Peter ZL4LV Dunedin. Ivan VK5HS Renmark reported hearing the keyer that David VK5AYD Coober Pedy was running.

A brief opening on the 8th Feb from VK5 to VK4 with Brian VK5BC working Wade VK4ACB Hervey Bay and Ray VK4BLK Yeppoon. The Hunter Valley beacon VK2RHV was also reported from ZL2 and 3.

On the10th Feb Rod ZL3NW in Christchurch worked Mike VK2ZQ and Mike VK2BZE both in the Wollongong area. Brian VK5BC Gawler worked Les VK4ALH Sunshine Coast and Mick VK4ZAA Brisbane whilst Brian VK4QB Rockhampton worked Brad VK2GWB, Brian VK3CCR Altona and Dave VK7ZKO. Wade VK4ACB Hervey Bay worked Col VK5DK Mt Gambier and the Alice Springs beacon was audible in VK3 and 5.

On the11th Feb Brian VK5BC worked Tony VK2BTS and Mike VK2OT from the Grafton area and Col VK5DK in Mt Gambier worked Peter VK4EA in the Brisbane area. Brian VK4QB in Rockhampton reported hearing the VK7 beacons and working Peter VK3TPR in Melbourne. Rod ZL3NW also reported hearing the VK7RAE beacon.

Late in the afternoon of the 12th Feb there was an opening from Far North VK4 to VK5 with Dale VK4SIX working Brian VK5BC.

The band was open on Feb 13th from VK4 to VK3, 5 and 7 on and off throughout the day. Joe VK7JG Launceston worked Brian VK4EK and Lloyd VK4ERQ whilst Colin VK5DK Mt Gambier and Brian VK5BC worked several stations including VK4s AHW, ERQ, BLK, WTN, ACB, QB and ID as well as VK2s YO and BHO. The Alice Springs beacon VK8RAS was also reported in VK2 and 5.

On the 15th Feb David VK4ZDP near Innisfail worked Les VK4ALH Sunshine Coast and Neville VK2YO at Kingscliff.

That sums up February, the remainder of the month being extremely quiet. It seems that another very good summer 'E' season has come to an end and unfortunately to date there has not been any reports of northern openings to JA etc. – come on the next sunspot cycle.

On a sad note I am sure all 6m operators will miss Jim VK9NS who passed away on the 10th February, RIP Jim.

Please send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

ar

Hamads *classifieds*

FOR SALE NSW

•OZI-BEAM 2 m Junior 3 ele Yagi kit. We are now taking orders for this kit which is currently under production. Order early to get one of the first production run. See our website. OZI-BEAM Kit $70 + postage. The OZI-WIRE, 3.5 MHz to 55 MHz, broad band antenna kit. OZI-WIRE BBA Kit $99 + $5.50 postage to VK. The OZI-POLE portable dipole (40 m to 6 m) Kit + opt. 80 m coil kit. OZI-POLE PD Kit $99 or opt. 80 m coil Kit $35 + postage. The OZI-DATA interface, a radio data interface kit for PSK31, SSTV, etc. $50 + $5.50 postage to VK. Contact the Mid North Coast Amateur Radio Group Inc. P.O. Box 505 Bellingen NSW 2454 http//www.mncarg.org/ or mncarg@yahoo.com.au

•RCA AR88D receiver. Good working condition. Original manual and other info. Mods. documented. Many spares. Photos available. John VK2BJU 02 4841 0272 demerland@goulburn.net.au

WANTED NSW

•I am looking for a RE COLLINS 312B-5 remote VFO unit and a COLLINS 30-L1 linear amp. Prefer both to be in good operating and physical condition, though non-working considered as long as intact. If you have either which you are not using or are prepared to part with, please contact me. Steve Beveridge VK2XWL; please email steve.b@internode.on.net Phone QTH 02 4952 5443 or mobile on 0412 194 513.

•NOVA TECH Pilot Pal 3 band DF radio. Nick L20106 02 9477 2134

WANTED VIC

•6AB4 valve for my GRUNDIG dip meter. For Wireless Set No 11, Phones/Line bakelite jack cover plate, a Receive Aerial Coil and two front panel plates. The plate Wireless Set No 11 (AUST) and the plate with AWA LTD. Clem Jarvis VK3CYD, PO Box 285, Newborough, 3825. 03 5126 2064 clem@dcsi.net.au

FOR SALE TAS

•YAESU FT-7 transceiver c/with copy of instruction manual, microphone and power lead. S/n 090326 $250. VK7CAJ 03 6227 9292

WANTED TAS

•Valves: EL32, 2E26, 7R7. Phone Athol 03 6426 2609

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•Is there anybody who could repair a COLLINS R-391 rx. Nick L20106 02 9477 2134 Asquith

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Tim Roberts VK4YEH QTHR.

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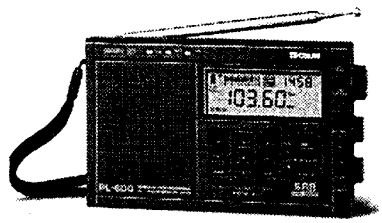
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Broadcast details

VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.130,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 438.075 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters. Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters. Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

GippsTech

The 2009 WIA AGM Weekend of Activities

Special Edition – *Friday 1st, Saturday 2nd, Sunday 3rd May 2009*

Speaker profiles

Rex Moncur VK7MO & Justin Giles-Clark VK7TW
Lightwave Communications



Rex Moncur VK7MO has been a beacon of achievement since he became active following his retirement from the workforce. With interests in weak signal VHF and UHF propagation, he began exploring various digital modes so that he could make contacts with distant amateurs even when conditions were flat. Rex was a key in promoting the adoption of the WSJT software suite in VK following its release. Of recent years, Rex has begun exploring the possibilities of light wave communications.



Justin Giles-Clark VK7TW has been a regular contributor to *AR* magazine over recent years, collating the News from VK7 column. Justin has been heavily involved in REAST and played a key role in the amateur observations of the BPL trial in Hobart. He has been involved in various light wave experiments for several years.
Rex and Justin are both recent recipients of the Ron Wilkinson Award.

Drew Diamond VK3XU
A new band soon: 136 kHz – an introduction to amateur LF communications



Drew Diamond VK3XU is well known for his prolific articles on how to build homebrew equipment, which appear in *AR* and in his self-published books. The majority of Drew's articles relate to the lower HF bands and are uniformly of excellent quality. He describes the appropriate theoretical basis of the project before giving clear instructions for the construction process, accompanied by his clear distinctive diagrams. It is no surprise that Drew has begun exploring equipment for the soon to be released LF band at 136 kHz.

Andrew Martin VK3OE
Tropospheric Ducting – From Ross Hull to the present



Professionally, Andrew Martin VK3OE (ex VK3KAQ) qualified as a Telecommunications Engineer in 1975, (until recently FIE Aust, SMIEEE). His current amateur radio interests are in VHF propagation and the structure of the lower atmosphere, especially elevated ducts. He developed a SODAR unit for his professional activities which serendipitously yielded significant information about the structure and behaviour of troposheric ducts. His presentations at the GippsTech Conference and his article in *AR* have significantly improved the understanding of ducts and their use for communications by amateurs.

Phil Harman VK6APH
Software Defined Radio – Principles and Practice



Together with Steve Ireland VK6VZ. Phil Harman VK6APH has published a series of articles in the RSGB journal RadCom – the first appeared in April 2006. Phil has been heavily involved in the design, construction and testing of several key modules of the High Performance Software Defined Radio (HPSDR) project, a project that has recently released the latest of the modules - Mercury, an HF direct sampling receiver board that is a companion to the Penelope 1/2-watt transmitter/exciter board. These two modules, together with other key modules, form a SDR transceiver system covering 100 kHz to 55 MHz.

David Smith VK3HZ
Am I really on frequency? Locking our radios to GPS references



David Smith VK3HZ is another regular presenter at the GippsTech Conference. Many amateurs have found that many transceivers disagree as to "where" a particular frequency is located. Those using narrow-band digital modes note that most radios drift sufficiently during the transmit/receive cycles that decoding of the message can become difficult. David will outline the issues and some of the approaches that can be taken to reduce or eliminate the problem.

Barry Miller VK3BJM
Aircraft enhancement – how to exploit it



Barry Miller VK3BJM has long been interested in VHF and UHF weak signal communications and has used Aircraft Enhancement propagation regularly from his home station and when portable. He is also interested in taking long trips into the outback, with a particular passion for visiting the Flinders Ranges. Barry has combined these two interests and routinely tests the limits of Aircraft Enhancement propagation from rare grid squares.

Foundation Licence Breakout Sessions

Ron Bertrand VK2DQ
Beyond Foundation – the next step



Currently serving as a WIA Director, Ron Bertrand VK2DQ has a long history in education of persons interested in becoming radio amateurs, or in helping existing amateurs to upgrade the level of their qualifications. Ron was one of many involved in discussions that resulted in the introduction of the Foundation Licence in Australia. He is also a key member of the group that oversee the running of the WIA Examination Service. Ron founded his on-line Radio and Electronics School in 1998, providing a hybrid interactive system of training for the Standard and Advanced amateur licences.

Roger Harrison VK2ZRH
The Foundation bands, the coming solar peak and propagation



Licensed in 1964 (VK3ZRY), Roger has worked in electronics manufacturing, ionospheric research and geophysics in Antarctica, but is better known from his career in journalism, as editor of Electronics Today International, Australian Electronics Monthly, Manufacturer's Monthly, Electronics News and 6UP (for VHF-UHF enthusiasts). Roger has chased DX from exotic locations like Antarctica, Cocos Island, Papua New Guinea, Townsville and a very deep valley in Melbourne's North Balwyn.

Peter Freeman VK3KAI
Introduction to microwaves



First licensed in 1979, Peter is primarily interested in the area of VHF, UHF and microwave weak signal amateur communications. Professionally Peter is a lecturer in human physiology. Amateur radio provides a technically stimulating diversion from work. Peter was the initiator of the GippsTech conference, which came into being with the support of the local club - EZARC. Peter is also the editor of *Amateur Radio* magazine..

And Remember!

GippsTech2009 is scheduled for July 11 and 12. Speakers are invited to contact Peter VK3KAI. Details at the EZARC web site http://www.vk3bez.org/

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Amateur Radio

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REVIEW: IC-7200



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plus

The underestimated magnetic loop HF antenna: *an overview*

WICEN: Fires out but more to do

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Amateur Radio

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Our Cover this month

Our cover this month features the Icom IC-7200 transceiver. Read the review by well known amateurs Bill Roper VK3BR and Ron Fisher VK3OM starting on page 22.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

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Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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Editorial

Peter Freeman VK3KAI

AGM weekend of activities

As this issue of AR hits your mailbox, the WIA Annual General Meeting weekend of activities will be either about to occur or will have just occurred.

Firstly, I must declare an interest in these activities on at least two counts:

As a WIA member, it is in my interest to directly observe formally that which has happened in MY (our) organisation over the past 12 months and to be able to put issues before the Board members in an open public forum. Surely this is part of being involved in any open democratic organisation. We all have the opportunity to put our thoughts forward during the year, yet such ideas may not reach broader public awareness.

Yes, as Editor, I am in a unique position to raise my thoughts, yet I usually prefer to put any ideas forward in more subtle ways, rather than attempting to use my position. I also recognise that the WIA could choose to censor any inappropriate thoughts that I might raise. That also is a consequence of being part of such a representative organisation.

Secondly, many will know that I originated the idea of an Australian annual technical conference with its focus on matters related to VHF, UHF and microwave amateur communications – the annual GippsTech conference hosted by the Eastern Zone Amateur Radio Club (Inc.) (EZARC).

The WIA has invited the EZARC to host this year's AGM and to organise an extra GippsTech event as a supporting focal event. EZARC decided to accept the offer, noting that we should make clear that this was to be an extra event – hence the name "GippsTech – Special Event".

Some people seem to have confused the two events – the Special Event and the forthcoming (normal) GippsTech conference, which will occur in early July, as is the usual course of events. This is unfortunate, as clearly some have not read the information available. I agree that there is little detailed information about GippsTech 2009 on the EZARC website, but that is as usual. We rarely have any detailed information until late May or early June, apart from the actual dates for the event. Part of this is due to the habits of those willing to present – they will often leave it until quite late to offer up a topic for presentation!

As Chair of the GippsTech Organising Committee (really just the EZARC Committee acting with a different focus), I have deliberately invited particular speakers to present on a variety of topics for the Special Event: some are well known to GippsTech regulars, others are on subjects I saw as being topical and of potential interest to a broader audience than the usual GippsTech attendees.

All the work by the people involved will soon show the results – the Special Event will be over, with appropriate reports in the June issue of AR. I look forward to meeting as many attendees as possible over the weekend.

And, of course, consider attending the annual GippsTech event over the weekend of July 11 and 12 for a full-on dose of all things VHF, UHF and microwaves! Further details will be available soon on www.vk3bez.org

Emergency communications

As you read this editorial, World Amateur Radio Day will have recently occurred, with a focus this year on the role of the amateur service in providing communications services during emergency situations, either real or in training exercises.

Included in this issue are three articles that continue the record of the service of our hobby during the disaster events of this year – more stories from the Victorian bushfires.

I have also included two accounts of Club activities during the John Moyle Memorial National Field Day, received just in time for inclusion in this issue. Whilst this contest can provide an excellent opportunity for fun club activities and camaraderie, we must remember that the "John Moyle" is really all about preparing for the provision of communications when least expected – during emergency situations.

I am sure that we shall have some further reports in due course, possibly in the same issue in which we publish the contest results.

73 Peter VK3KAI **ar**

Michael Owen VK3KI

Promoting amateur radio

A few weeks ago the WIA Board met for a face to face meeting over a weekend. We only have two or three such meetings a year because to travel and meet is expensive. Mostly we rely on the phone and email for the rest of the time.

One important aspect of meeting personally is that issues can be explored that are hard to address by other means.

I have previously pointed out that the Exam Service statistics show that the existing demand met by the introduction of the Foundation licence has now been met, and that our task is now to promote amateur radio.

How we do that became one of the important issues discussed at the meeting.

Do we have to accept that amateur radio today must be different from amateur radio in the past? Can amateur radio be relevant to today's world? Can we accept change? But how do we see amateur radio as relevant?

There is no simple solution. There may be a number of opportunities with a number of solutions. One conclusion that was clear was that we needed to consult with those who are on the front line, particularly the clubs.

Several threads emerged.

One was that amateur radio should be promoted to those groups who had interests that would be enhanced by the communication capabilities that the amateur service's family of frequencies can offer. One group are those who are involved in boating, particularly offshore. Another group are the four wheel drive people who tour the inland.

Do we advertise in their magazines? Do we participate in their major meetings? Do we use our website better to get the message to those people? Once we have established an interest, who follows up that interest?

Another thread was the importance of attracting young people. But how do we do that? Encourage radio clubs at schools? Hope that there are teachers who are interested in amateur radio? But unless it is relevant to the curriculum, will the schools be able to find time for such activities?

The Scout groups are obviously an important resource, and groups exist in some states that really do encourage the interest.

ARISS is one tool that is effective in attracting young people, particularly school children, to the magic of amateur radio in a modern world.

Quite apart from these specialist groups we need to promote amateur radio to the community generally.

How do we do that?

Interestingly, there is a view that it may be an easier task in regional areas. There a club may have access to a local radio station, a local newspaper and even, in some areas, a local television station, all looking for local news.

Apart from providing stories for local media, clubs may participate in local activities and promote amateur radio.

The role of the clubs is critical.

It is the club that is part of the local community, it is the club that may have the will, the skill and the means to attract, train and assess. The word "may" in the last sentence is important. We must recognise that not all clubs wish to participate in promoting amateur radio, training and assessing those who wish to participate. Some clubs were formed to promote particular interests, and what we are talking about here is not one of them. But merely recognising the fact is not sufficient. If the WIA office sends someone seeking to become an amateur to a club that is not interested, we may do more harm than if we had done absolutely nothing.

There may be another aspect to the reluctance of some clubs to train. That is, uncertainty as to how to go about it. Is there a need for a training video, so amateurs, perhaps in remote areas, can see how it should be done?

But what should the WIA do? How can we help?

One positive decision that we have made is to encourage clubs to undertake projects and activities to attract new amateurs through the Club Grant Scheme. We have also made it easier to directly purchase the Foundation Licence Manual from the WIA website.

It is fairly easy to make a list of other things that may help. It goes something like this:

Make the WIA website more attractive to those who are interested in becoming radio amateurs;

Produce a training video and make it available for download from the WIA website or available on disk at a cost as low as possible;

Produce and make available posters and pamphlets for use by clubs and groups promoting amateur radio;

Produce a short promotional video;

Produce "Press Kits", with background information, and generic photos for use by clubs;

Produce short video clips that can be made available for television use;

Provide guides and material that can be used by those talking to schools;

Distribute to clubs releases that can be provided to local newspapers and radio stations;

Develop kits that can be used to promote amateur radio to special interest groups;

Encourage stories and features in major newspapers;

Ensure that we refer people who seek to become amateurs to appropriate clubs.

That list is not exhaustive. Nor does it really identify what matters, and we do not even know what the clubs would see as useful. The WIA must apply what resources it has selectively and effectively.

We need advice. We see the Advisory Committees playing a role in developing advice, perhaps in some places encouraging input. Perhaps it would be a good idea to work with three or four clubs in different environments to test different approaches and tools.

Once again, the more feed-back we receive the more likely we are to get it right.

Two of our Directors have accepted a special responsibility for refining this program and making it effective. If you have suggestions, do share them by letter or by email to secretary@wia.org.au

ar

WIA News

2009 Club Grant Scheme targets new projects

The WIA Board at its face to face meeting on 1 and 2 March 2009 reviewed the Club Grant Scheme's operation in 2008, and resolved to conduct the scheme this year, with a budget of $6,000.

In accordance with the Rules adopted last year, the Board identified two kinds of project that would be supported this year, in particular, projects and activities (to be conducted before 1 April 2010) to attract new amateurs and projects supporting emergency communications and preparedness for emergency communications.

It was agreed that properly establishing a club's Membership Percentage (which is defined in the Club Scheme Rules on the WIA website), would be a condition precedent to participation this year.

Details will be published shortly.

WIA Welcomes Fibre-to-the-Home Decision

The Federal Government recently announced its decision on Australia's National Broadband Network. In a surprise move, instead of deploying a widely expected half-way-house fibre-to-the-node (FttN) solution from a consortium of companies, the Government is moving ahead with its own full-blown 100Mb/s fibre to the home rollout (FttH).

WIA Director Phil Wait commented on the decision, pointing out that any fibre-to-the-node solution which did not include Telstra would have resulted in a variety of 'alternative' access technologies used to connect the 'node' to customers premises.

This decision appears to remove the possibility of widespread interference to radio communications from any network-wide adoption of BPL technology, but still leaves as a concern the possibility of interference from in-home use of BPL as an internal distribution technology said Phil.

Challenge to Australian 70cm Band Spectrum

The Australian Communications and Media Authority (ACMA) has released a further consultation paper addressing future arrangements in the 400 MHz spectrum between 420 and 520 MHz This paper follows on from a previous discussion paper on spectrum options for this band. Of interest was the spectrum 420 MHz to 430 MHz and 440 MHz to 450 MHz where the Defence Department is the Primary User and the Amateur Service is a Secondary User.

The WIA's submission argued for its continued use of the spectrum for UHF links in support of emergency services networks, and an Amateur Television Channel for the purposes of future training options particularly digital television.

The previous consultation paper sought comments in response to 31 questions; of particular interest to the amateur community are the questions:

ACMA seeks comments on the option of identifying parts of the 400 MHz band for low power single frequency applications under a class licence;

ACMA seeks comments on the existing and potential defence uses of the 440 – 450 MHz band;

ACMA seeks comments on the possibility of opening up some or all of the 440 – 450 MHz band for greater use by the land mobile service for purposes other than defence.

The latest ACMA paper indicates that the segment from 440 MHz to 450 MHz is out of scope, however the segment 420 MHz to 430 MHz is being consider for use for Government services.

WIA Director Peter Young commented that although the pressure has eased somewhat, the WIA will continue to press its case through further submission(s) and representation on the ACMA 400 MHz Working Group.

Commemorative Event to mark 40 Year anniversary of Apollo Moon Landing

A group of radio amateurs is planning a commemorative event to mark this year's 40th anniversary of the Apollo 11 moon landing. Called 'Echoes of Apollo,' various activities are planned around June and July. The organisers are negotiating with some of the world's largest and most capable amateur radio moon-bounce stations, and also some deep space radio facilities.

The idea is to hook-up people from various locations using moon-bounce and, if the antennas are large enough, possibly achieving near broadcast quality audio, you might say, a kind of 'Back-to-the-Moon' day.

Also planned is an HF radio weekend, with HF stations set up near original support sites for the Apollo 11 mission. The WIA will publicise the event and issue certificates to amateurs making contact with event stations. The EME event is planned for the 27th June this year and the HF event is planned for the weekend and the Monday of 18-20th July, so time is very short.

The WIA will bring more information on this event as it comes to hand.

WICEN Activation — Oil Spill Emergency Clean Up

On Sunday 15 March 2009, the North Coast Region Specialist Communications Group was activated to provide communications support for the "Oil Spill Emergency" Clean Up operation.

The Sunshine Coast Amateur Radio Club's WICEN Caravan (VK4WSC) and members of the North Coast Region (EMQ), Specialist Comms Group provided communications support to the clean up, based at Kawana Surf Club.

The group is using the facilities of the WICEN caravan and the local amateur repeater network, along with 2 fixed SES, 2 portable SES repeaters, as well as 30+ SES handheld radios to service the operation.

David Rankin VK3QV/9V1RH SK

David Rankin VK3QV, 9V1RH passed away in Singapore on 19 March 2009.

David was always the enthusiastic amateur, originally involved with Victorian Division, then the Federal Executive, and was WIA Federal Vice President for a number of years.

David lived in Singapore since around 1972, and living in Singapore he developed both a real interest in and understanding of amateur radio in the developing countries of what had become his part of the world. He actively participated in what had become his home society, Singapore Amateur Radio Transmitting Society (SARTS). He was a great supporter of SEANET. His real interest became IARU Region 3. He was secretary of IARU Region 3 from 1973 to 1982, Chairman of Region 3 from 1982 to 1994, and a Director from 1994 to 1997.

ar

An overview of the underestimated magnetic loop HF antenna

Leigh Turner VK5KLT

It seems one of the best kept secrets in the amateur radio community is how well a small diminutive magnetic loop antenna can really perform in practice compared with large traditional HF antennas. The objective of this article is to disseminate some practical information about successful homebrew loop construction and to detail the loop's key distinguishing characteristics and unique features. A magnetic loop antenna can very conveniently be accommodated on a table top, hidden in an attic/roof loft, an outdoor porch, patio balcony of a high-rise apartment, or any other space constrained site.

A small but efficacious HF antenna for restricted space sites is the highly sought after Holy Grail of many an amateur radio enthusiast. This quest and interest is particularly strong from amateurs having to face the prospect of giving up their much loved hobby as they move from suburban residential lots into smaller restricted space retirement villages and other communities that have strict rules against erecting elevated antenna structures.

In spite of these imposed restrictions, amateurs do have a practical and viable alternative means to actively continue the hobby using a covert in-door or portable outdoor and sympathetically placed small magnetic loop.

This paper discusses how such diminutive antennas can provide an entirely workable compromise that enable keen amateurs to keep operating their HF station without any need for their previous tall towers and favourite beam antennas or unwieldy G5RV or long wire. The practical difference in station signal strength at worst will be only an S-point or two.

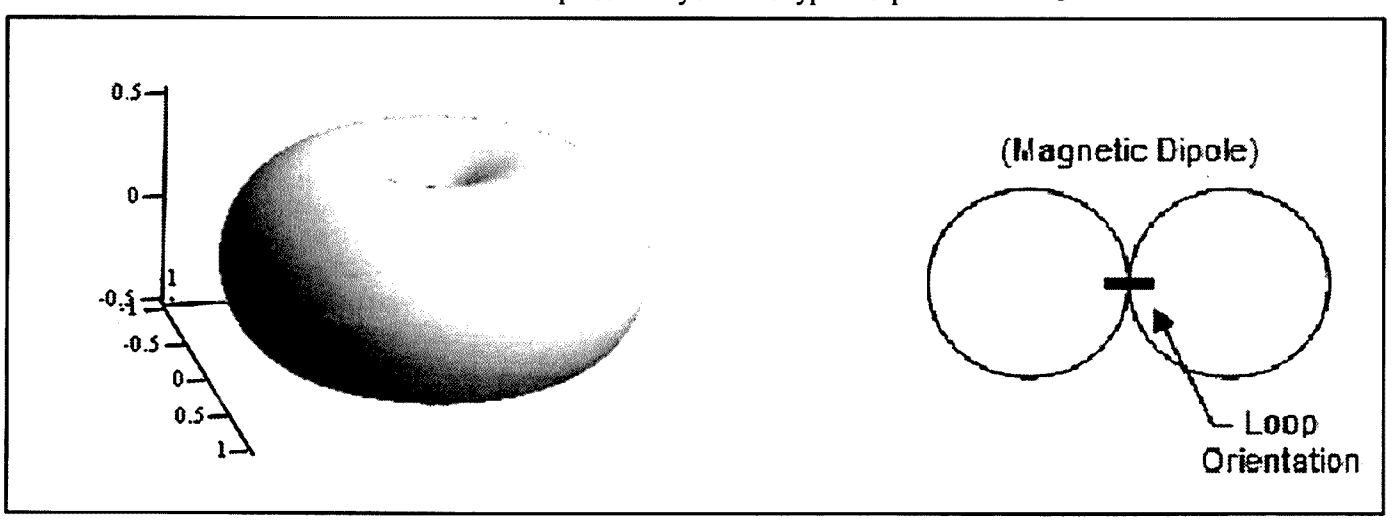
Anyone making a cursory investigation into the subject of magnetic loop antennas using the Google internet search engine will readily find an overwhelming and perplexing abundance of material. This article will assist readers in making sense of the wide diversity of often times conflicting information with a view to facilitate the assimilation of the important essence of practical knowledge required to make an electrically-small loop work to its full potential and yield good on-air performance.

A few facts

A properly designed and constructed small loop of nominal one metre diameter will outperform any antenna type except a beam on the 10 m/15 m/20 m bands, and will be within an S-point (6 dB) of an optimised mono-band beam that is mounted at an appropriate height above ground.

Magnetic loops really come into their own on the higher HF bands from, say, 40 m through to 10 m; oftentimes with absolutely stunning performance rivalling the best conventional antennas. Easily field deployable and fixed site tuned loops have been the routine antenna of choice for many years in professional defence, military, diplomatic, and shipboard HF communication links where robust and reliable general coverage radio communication is deemed mandatory.

So where is the catch; if the small loop is such a good antenna why doesn't everyone have one and dispense with their tall towers? The laws of nature and electromagnetics cannot be violated and



Magnetic loop radiaton pattemn diagram

the only price one pays for operating with an electrically-small antenna is narrow bandwidth. Narrow instantaneous bandwidth rather than poor efficiency is the fundamental limiting factor trade-off with small loops.

Any small antenna will be narrow band and require tuning to the chosen operating frequency within a given band. Users of magnetic loops must be content with bandwidths of say 10 or 20 kHz at 7 MHz or a little more than 0.2%. They are content as long as the antenna can be easily tuned to cover the frequencies that they wish to use. For a remotely sited or rooftop mounted antenna this requires just a modicum of that ingenuity and improvisation for which radio amateurs are renowned.

A small loop antenna for transmitting is defined as having a circumference of more than one-eighth wavelength but somewhat less than one-third wavelength which results in an approximately uniform current distribution throughout the loop and the structure behaves as an inductance.

The doughnut shaped radiation pattern is in the plane of the loop with nulls at right angles to the plane of the loop. The loop self-inductance can be resonated with a capacitance to form a high-Q parallel tuned circuit. The attainment of a high-Q tells us that the loop antenna is not lossy and inefficient.

When power is applied to the loop at its resonant frequency all of that power will be radiated except that portion absorbed in the lumped I^2R conductor and capacitor losses manifesting as wasteful heat. With proper design these series equivalent circuit losses can be made negligible or at least sufficiently small compared to the loop's radiation resistance that resultantly high intrinsic radiation efficiency and good antenna performance can be achieved.

Current through the loop's radiation resistance results in RF power being converted to electromagnetic radiation. However, since the small loop's radiation resistance is very small compared to that of a full sized resonant ½λ dipole, getting this favourable ratio of loss to radiation resistance is the only 'tricky' and challenging part of practical loop design and homebrew construction.

Through utilizing a split-stator or a butterfly style air variable capacitor construction or a vacuum variable capacitor, low loss can be achieved in the tuning capacitor. Conductor loss can then be controlled by optimal choice of the diameter of copper tubing used to form the loop element and paying very careful attention to low ohmic interconnections to the capacitor such as welded or silver soldered joints, etc. With 100 Watts of TX drive power there are many tens of Amperes of RF circulating current and Volt-Amps-Reactive (VAR) energy flowing in the loop conductor and tuning capacitor.

Capacitor losses are further minimised by welding the rotor and stator plates to the stacked spacers to eliminate any residual cumulative contact resistance. When connected across the loop terminals the butterfly construction technique inherently eliminates any lossy rotating contacts in the RF current path.

The configuration permits one to use the rotor to perform the variable coupling between the two split stator sections and thus circumvent the need for any lossy wiper contacts to carry the substantial RF current. Since the fixed stator plate sections are effectively in series, one also doubles the RF breakdown voltage rating of the composite capacitor.

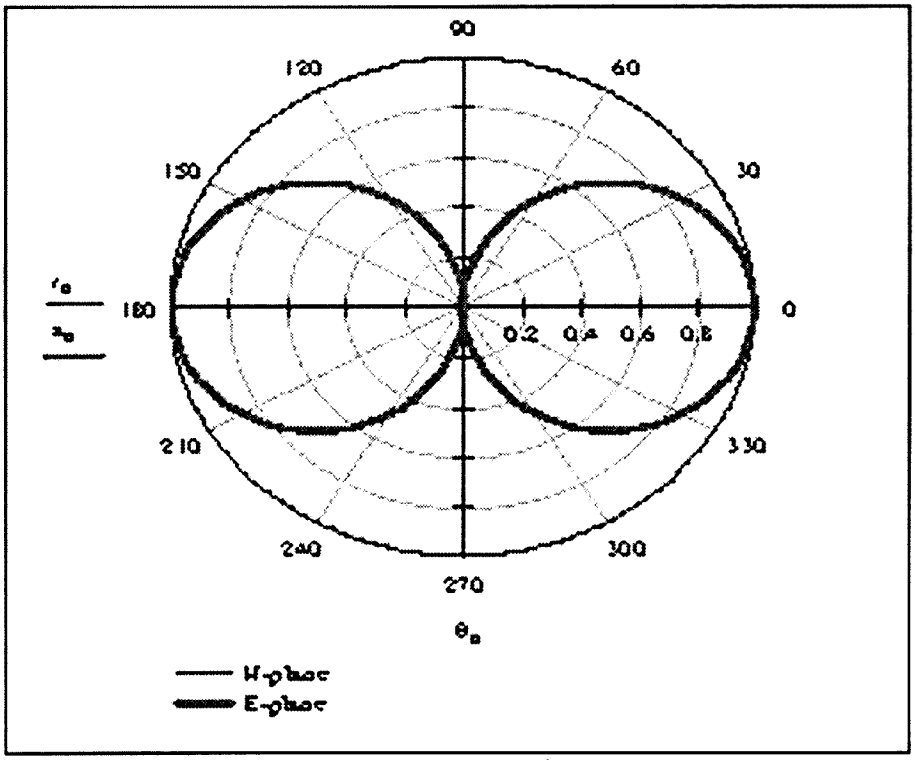
In view of the fact the loop antenna is a high-Q resonant circuit, many kilovolts of RF voltage can be present across the tuning capacitor and appropriate safety precautions must be taken. Loop antennas capable of handling a full 400 Watts PEP are readily achievable when appropriate construction and tuning components are selected.

Although loop antennas have deceptively simple appearance, they are complex structures with radiation patterns and polarisation characteristics dependent on whether they are fed in a balanced or unbalanced fashion. The method of feeding and matching the loop resonator, ground plane configuration, as well as the geometric form factor and physical proportions of the loop element itself are all fertile ground for experimentation.

Various matching methods include series capacitor, transformer coupled subsidiary shielded-Faraday loop, and gamma-match, etc; each with their respective merits.

Small loop antennas have at least two simultaneously excited radiation modes: a magnetic and an electric folded dipole mode. When the ratio proportions of loop mode and dipole mode radiation are juggled to achieve equal strengths some radiation pattern asymmetry results and a useful degree of uni-directionality can be achieved with a typical front to back ratio of about 6 dB or so.

The small loop with its doughnut shaped pattern exhibits a typical gain of 1.5 dBi over average ground and a gain of 5 dBi when deployed with either



Magnetic loop field amplitude diagram

short radials (the length of cach radial need only be twice the loop diameter) or mounted over a conductive ground plane surface. By comparison a large ½λ horizontal dipole mounted ¼λ above average ground has a gain of 5.12 dBi and a ¼λ vertical with 120 radials each ¼λ long has a gain of 2 dBi over average ground. The front to side ratio of a loop is typically 20 to 25 dB.

However the small loop has one very significant advantage over any other antenna due to its unique radiation pattern. If the vertically oriented loop's figure-8 doughnut pattern radiation lobe is visualised standing on the ground the maximum gain occurs at both low and high angles, radiating equally well at all elevation angles in the plane of the loop, that is, radiation occurs at all vertical angles from the horizon to the zenith.

Because the loop radiates at both low and high angles, a single loop can replace both a horizontal dipole and a vertical. This is particularly beneficial on 160, 80 and 40 m where the loop will provide outstanding local/regional coverage and easily match and often outperform a tall ¼λ vertical for long haul DX contacts, that is, an exceptionally good general purpose antenna.

Energy radiated by the small loop is vertically polarised on the horizon and horizontally polarised overhead at the zenith. It will be quickly realised that a loop has the distinctive property of providing radiation for transmission and response for reception over both long distances and over short to medium distances. This is achieved by virtue of low angle vertically polarised propagation in the former case and by means of horizontally polarised oblique incidence propagation in the latter case. In contrast, a vertical monopole is useful only for low angle vertically polarised propagation since it exhibits a null overhead and poor response and radiation at angles in excess of about 45 degrees. Such antennas are of course very useful for long distance communication by means of low angle sky wave skip propagation, or for short range communication via the ground wave propagation mode.

In further contrast, a horizontal ½λ dipole (or beam arrays comprising dipole elements) at a height above ground of just a fraction of a wavelength (as opposed to idealised free space or mounted very high) exhibits maximum polar response directly overhead (good for NVIS) with almost zero radiation down near the horizon. Such popular 'cloud warmer' antennas in residential situations as the surreptitiously hung ubiquitous G5RV, end-feds, dipoles, inverted-V, etc. are thus most useful for short to medium range communication in that portion of the HF radio spectrum where oblique incidence propagation is possible.

Importantly it should be noted when comparing small loops with conventional antennas that a 20 m Yagi beam, for example, must ideally be deployed at a height above ground of at least one wavelength (20 m) in order to work well and achieve a low take-off angle tending towards the horizon for realising optimal no compromise long-haul DX operation.

Unfortunately such a tower height is impractical in most residential zoning rule situations imposed by municipal councils and town planners. If the Yagi beam is deployed at a lower 10 m height then a diminutive loop will nearly always outperform the beam antenna.

This writer never fails to be amused by folks who acquire a potentially high performance Yagi HF beam and sacrilegiously deploy it in suboptimal installations in respect of height above ground or proximity to a metal roof. The problem worsens on the lower bands below 20 m where the resultant lobe pattern direction is not at all very conducive to facilitating good DX communication.

In comparison to a vertically mounted/ oriented loop, the bottom of the loop does not need to be more than a loop diameter above ground making it very easy to site in a restricted space location. There is no significant improvement in performance when a small loop is raised to great heights; all that matters is the loop is substantially clear of objects in the desired direction of radiation! Mounting on an elevated roof ground-plane yields excellent results.

A good HF antenna for long haul DX requires launching the majority of the TX power at a low angle of radiation; things a good, efficient and properly installed vertical, a properly sited small magnetic loop, and a big multi-element beam atop a very tall tower do very well.

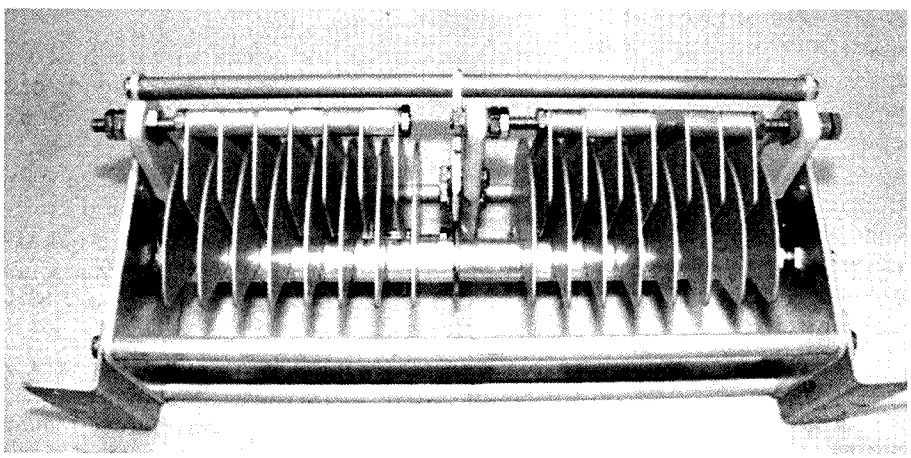
Receiving properties

In a typical high noise urban environment a loop will nearly always hear more than a big beam on the HF bands. The small magnetic loop antenna (a balanced one) responds predominately to the magnetic component of the incident EM wave, while being nearly insensitive to the electric field component; which is the basic reason why loops are so impressively quiet on receive; often times dramatically so.

They will pull in the weak signals out of the ambient noise and you will very likely receive stations that you would never hear when switching across to a vertical, dipole or beam antenna.

In a propagating radio wave the magnitude of the electric vector is 120Ω or 26 dB greater than the magnitude of the magnetic vector, the difference being due to the intrinsic impedance of free space (377 Ohms).

On the other hand the induction fields associated with man-made noise have electric E-field components many times greater than a normal radiation field (radio wave). While a dipole or vertical



Split stator butterfly capacitor

antenna is sensitive to both the electric and magnetic components of a wave, the small loop is responsive only to the magnetic H-field component and it will be substantially 'blind' and offer a high degree of rejection to pickup of undesired man made noise and atmospheric disturbances.

Hence the widely used term 'magnetic loop' antenna to signify this field discrimination to the components of the incoming incident EM wave. Antenna theory treats the loop as the electrical conjugate of the dipole, that is, the loop is a 'magnetic dipole' while an ordinary dipole is an 'electric dipole'.

Significantly, a small loop antenna will typically produce a signal-to-noise ratio (SNR) that is some 10 to 20 dB greater than a horizontal dipole in a noisy urban environment and an even greater improvement in SNR when compared to a vertical antenna as a result of the man-made noise comprising a strong electric field component and being largely vertically polarised.

The most important criterion for reception is the signal to noise ratio and not antenna gain or efficiency. In the HF bands, particularly at the low-mid frequency portion, external man-made and galactic/atmospheric noise is dominant.

The magnetic loop antenna has one other important practical advantage in receive mode. The aforementioned high-Q resonator imparts a very narrow band frequency selective bandpass filter ahead of the RX front-end stages.

Such an incidental preselector comprising the antenna itself imparts greatly improved receiver performance on the congested lower HF bands with high power broadcast stations and particularly when lightning strikes and atmospheric electrical discharges are present in the regional area. Unwanted overload causing and adjacent-channel QRM interference signals are rejected or heavily attenuated.

As well as eliminating strong-signal overload and intermodulation effects, the filtering dramatically reduces the amount of lightning induced broadband impulse energy fed to the RX front-end and weak signals can still be heard when reception under such adverse conditions was previously impossible.

It is these collective characteristics of small loop antennas that enable them to often very significantly outperform their large dipole, Yagi or Quad beam counterparts during direct A/B comparative testing. Conversely in TX mode the antenna's inherent filter action selectivity causes any transmitter harmonics to be greatly attenuated and not radiated. This can help with eliminating some forms of TVI.

Construction and siting issues

Without a good quality low-loss split stator or butterfly or vacuum variable capacitor of adequate RF voltage and current rating, it is quite futile building a magnetic loop antenna and expecting it to yield the impressive results of which it is potentially capable.

The minimisation of all sources of loss is particularly important in TX mode. By virtue of the shorter rotor, the butterfly style capacitor has slightly lower rotor loss than the split-stator construction style. The tuning capacitor is undoubtedly the single most critical component in a successful homebrew loop project.

Although more expensive and harder to find, vacuum variable capacitors have a large capacitance range in respect of their min/max ratio and allow a loop to be tuned over a considerably wider frequency range than that achievable with an air variable capacitor. Vacuum capacitors also have lower intrinsic losses than most air variables.

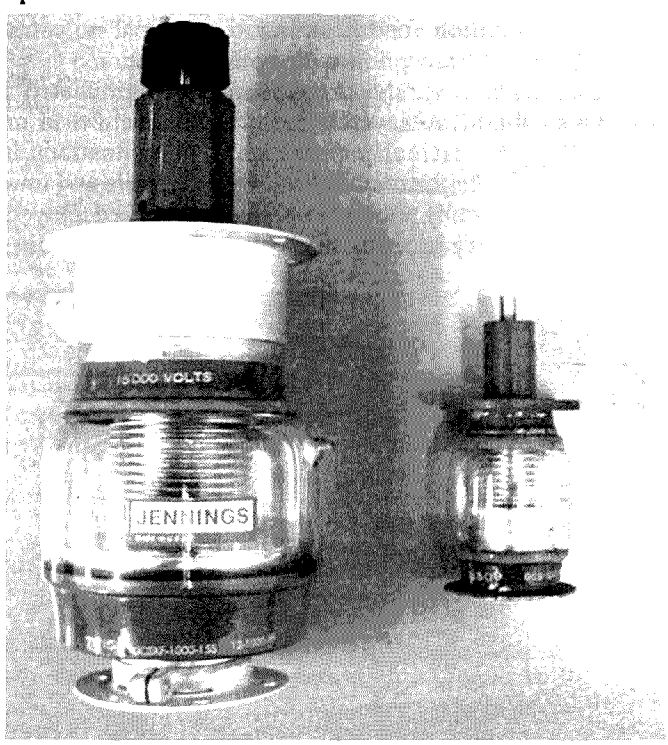
Good quality Jennings vacuum variable capacitors and a multitude of Russian made equivalents can be readily found on the surplus radio parts markets and eBay, as can their associated silver-plated mounting and clamp hardware to ensure a low contact resistance connection to the loop antenna conductor.

Other creative means can also be used to fashion a high VAR rated low-loss capacitor such as trombone, piston, or interdigitated meshing plate configurations. Air is always the preferred dielectric as most other materials have high loss tangents and dissipation factors.

Whether a vacuum or air variable or homebrew capacitor is chosen, their mechanical shafts can be readily interfaced to a reduction gearbox and motor drive to facilitate easy remote tuning of a roof top or covert loft mounted loop. The antenna tuning can be manual or automatic based on VSWR sensing and a self-tuning servo system to control the drive motor.

Failure to pay very careful, strict attention to construction details in relation to eliminating all sources of stray losses and making bad siting choices such as close proximity to ferrous materials are the two main reasons why small magnetic loop antennas sometimes fail to live up to their performance potential; instead behaving as a proverbial 'wet noodle' with associated poor signal reports. Conversely a well built/sited loop is an absolute delight.

Transmitting loop antennas intended for optimal coverage of the most popular portion of the HF spectrum from 3.5 MHz to 30 MHz are best segregated into at least two distinct loop sizes. A nominal 0.9 m diameter loop for covering all the upper HF bands from 20 m through to



Vacuum capacitors

10 m (and perhaps also tunable down to 30 m depending on capacitor min/max ratio), and a 2 m diameter loop for covering the lower bands 80 m through to 30 m. For best operation down at 160 m and improved 80 m performance increased loop diameters of 3.4 m to 4 m should be considered.

Top band operation at 1.8 MHz is always the hardest challenge for any antenna type, small loops (typical dimensions of 0.02λ) included, but their on-air performance can nevertheless be authoritative with a commanding signal presence.

There are however, no 'free lunches' (and few cheap ones) when shrinking the size of antennas as the free space wavelength has not yet been miniaturized by nature redefining the laws of physics! Consequently antennas of such diminutive size must always be placed into proper perspective when compared with the performance attainable from a full-sized λ/2 horizontal dipole for 160 m.

Most amateurs do not have sufficient residential block size and/or mast height in a fraction of wavelength to accommodate a 160 m dipole that works properly with a decent radiation efficiency and ability to put its radiated power in a useful direction. Similarly, reasonably efficient and efficacious verticals for 160 m operation unfortunately exceed, by a great margin, the height permitted by local council and residential building code regulations.

The performance on the 160/80 m bands will be highly dependent on what antenna you use as a reference comparison, for example, a centre-loaded mobile whip or full size dipole/monopole, or whatever and what path is used, NVIS, ground wave, sky wave, etc.

The loop conductor diameter is determined by the desired loss resistance due to skin-effect, and choices can range from modest 6 mm copper tubing to large bore 100 mm copper or aluminium tube. Commonly used conductor diameters used to construct a magnetic loop are 20 mm and 32 mm soft copper tube.

Note that the radiation efficiency is not related to the loop size. Loop antenna efficiency is determined by the conductor tube diameter and its conductivity. This conceptual notion is counterintuitive for many folks.

A small loop will also be efficient and radiate power very effectively on 80 m and 160 m but the resultant L/C ratio and stored energy will often be such that the loop's Q factor will be so high as to yield an impractically small instantaneous bandwidth that is not useful for SSB communication purposes.

Achievable bandwidth is roughly proportional to loop size/diameter and Q is inversely proportional to the loop diameter. Depending on its construction, a small loop of nominal one metre diameter can exhibit an intrinsic radiation efficiency of 90% over the 1.8 to 30 MHz frequency range.

Copper tubing is the preferred material to fabricate the loop as it has a higher conductivity than aluminium. Larger size semi-rigid Heliax coax such as LDF550 will conveniently make excellent loop construction material for the smaller diameter 20 m to 10 m HF band loops when run at the 100 Watt power level.

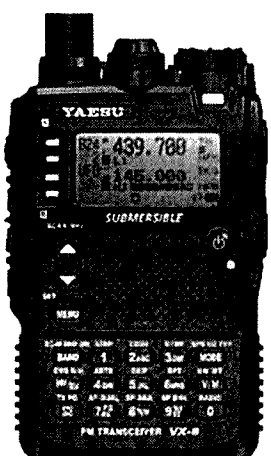
In relation to resistance and conductivity, small loop antennas inherently exhibit very low radiation resistances, which compete with the ohmic resistances of the loop conductor and the resistances from connections and

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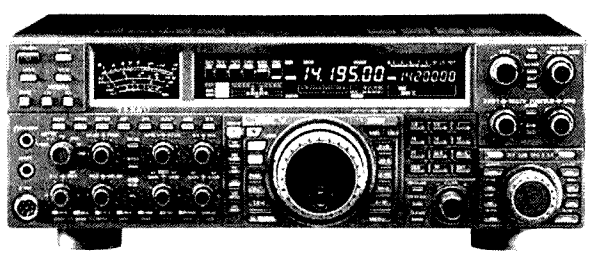
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welds, including the tuning capacitor connection.

Magnetic loop antennas will typically have a radiation resistance in the order of 100 to 200 milliohms. This means that every additional milliohm caused by a poor contact will cost you one percent efficiency. That is why professional magnetic loop antennas for transmitting purposes will never have mechanical contacts and everything including the capacitor plates should be welded or soldered.

It is common to experience 60 Amperes or more of RF circulating current in the loop and capacitor when fed with several hundred watts of power.

In the practical deployment and siting of a loop antenna there are extrinsic factors of both a beneficial and deleterious kind affecting the radiation and loss resistances when the loop is not strictly deployed in a free space scenario.

When the loop is mounted over a perfectly conducting ground plane reflector or copper radial wire mat, an electrical image is created that effectively doubles the loop area. This in turn beneficially increases the loop's radiation resistance by a substantial factor of four times. Such a situation is easy to facilitate.

Conversely if the loop is placed over average ground (a reasonable reflector) the radiation resistance increases but a reflected loss resistance is also introduced due to transformer effect coupling near-field energy into the lossy ground.

Similarly when ferrous/iron material is too close, the magnetic near-field of the loop will induce by transformer action a voltage across the RF resistance of the material causing a current flow and associated I2R power loss. This situation might arise for example when the loop is mounted on an apartment balcony with nearby iron railing or concrete rebar, or similar; the deleterious influence can be minimised by simply orienting the loop to sit at right angles to the offending iron or steel material.

Another loss contributing component is due to current flowing in the soil via capacitance between the loop and the soil surface. This capacitive coupling effect is again minimised by keeping the loop at least half a loop diameter or more above the ground.

The transformer analogy for the loop antenna is a good one. The HF communication link may be visualised as a reciprocal 'space transformer' with the loop acting as a secondary 'winding' loosely coupled to the distant transmitting antenna. The magnetic field component of the incident electromagnetic wave induces a small RF current to flow in the loop conductor by means of induction that in turn gets magnified by the loop resonator's high Q that is appropriately impedance matched to the coax transmission line.

A freestanding loop is best supported a metre or two in height on a short non-metallic mast section of 100 mm diameter PVC drainpipe and pedestal foot fashioned from plastic plumbing fittings. The loop can also be placed on a rotator drive and turned for best signal strength or it can be oriented in angle to null-out particularly bad QRM.

Care must be taken not to touch the loop when transmitting and to keep a safe distance away from the loop's magnetic near-field to ensure conservative compliance with EMR standards for human exposure to EM fields. A distance equal to or greater than one or two loop diameters away is generally a safe field strength region. RF burns to the skin from touching the loop while transmitting are very unpleasant and take a long time to heal.

Concluding remarks:

The proof of the pudding is always in the eating so experimentally inclined amateurs are encouraged to gain some first hand experience by getting into the shack and constructing some homebrew loops. Such empirical validation of efficacy is always very gratifying, particularly when a VK station can have a solid 5 and 9+ QSO on 20 m with a USA or Canadian station from an elegant looking Lilliputian indoor loop sitting on a table fed with a modest 50 Watts!

What we ultimately seek from any antenna is reliable HF communication at all times when a band is open for DX and, simply put, that means radiating most of the RF that is applied to the antenna in a useable direction and take-off angle.

The underestimated magnetic loop antenna satisfies that basic criteria very well.

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A simple high quality AM detector for general high fidelity listening of local AM broadcast stations

Felix Scerri VK4FUQ

So called high fidelity AM reception has been a long time passion and over the years I have investigated a number of different circuit approaches to low distortion, high fidelity AM reception (Reference 1).

Although subject to a number of potential difficulties, I tend to resort to simple 'diode' based detectors as they work well. The circuit to be described represents a slight simplification of some of my more complex designs but can form the basis of a truly low distortion and high fidelity AM detector for reception of 'local' broadcast stations.

AM 'diode' detectors are capable of truly excellent performance subject to a couple of technical issues, namely a sufficient level of RF injection and optimised detector output loading and 'buffering'. Both of these issues have been addressed in this design by using a simple un-tuned MPF102 FET RF stage ahead of the detector providing some voltage gain and buffering along with a low distortion, high impedance FET-based audio buffer following the diode load resistor.

This detector overall can handle any AM broadcast station 'processing' very well, something that causes casually designed (and not so causally designed as well) diode detectors heartburn and audible distortion as well. The RF stage, although contributing only around 10 db of voltage gain, helps considerably in this respect. One of our local broadcast stations always sounds noticeably distorted unless this RF stage is in circuit. It is thought that the 'processing' system in use is responsible for this distortion but in any case the RF stage removes all traces of audio distortion. In any case A/B comparisons show noticeably 'cleaner' detected audio on all stations indicating that a little RF voltage injection is generally beneficial in generally reducing diode detector distortion. FETs are perfect for this application, providing nice clean RF voltage gain along with very high impedance input buffering allowing good tuned circuit selectivity to be obtained without noticeable loading of the preceding tuned circuit!

The diode detector stage itself is a little novel in that capacitive input into the diode is used, with an RF choke used to provide the DC path for the diode along with the diode load resistor. A modern BAT46 Schottky hot carrier diode is used instead of the more traditional germanium diode. These BAT46 diodes work as well as germanium diodes in terms of general RF sensitivity, along with the low noise profile typical of Schottky (hot carrier) diodes. That really makes an audible difference in a high quality tuner application. This detector 'sounds' superb with a potential audio quality that has to be heard to be believed. Just on the subject of diodes, as good as the BAT46s are, my investigations do indicate that with very weak, but still readable stations, a good sensitive germanium diode produces less audio distortion. Specifically, I have a number of 'gold bonded' germanium diodes such as the very old Mullard OA5 that exhibit superb very weak signal performance. These 'gold bonded' germanium diodes are actually an early variant of the modern hot carrier diode. Of course the broadcast station itself is the ultimate limiting factor but this detector faithfully reproduces all the modulation present with very low noise and distortion.

Thanks to the high impedance input circuit of the FET RF stage, a simple high Q tuned circuit can be used with good selectivity although the apparent selectivity will vary somewhat across the band due to the changing tuning LC ratio, but it is very satisfactory in practice. So there you go, a very simple circuit overall, but one that delivers AM radio audio with a quality that is subjectively as good as high quality FM in terms of sound quality.

Reference 1: http://sound.westhost.com/articles/am-radio.htm

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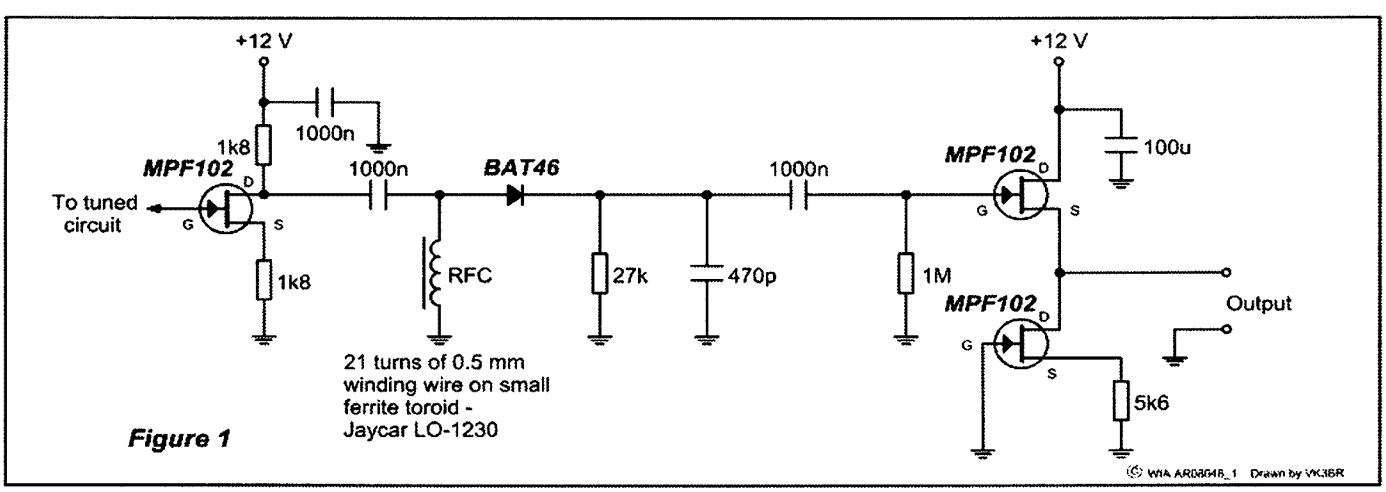


Figure 1: The circuit of the high quality AM detector.

WICEN past, present and possible future

Jim Linton VK3PC*

The Victorian Emergency Management Act support agency WICEN (Vic) was prepared and trained for its deployments for the Black Saturday bushfire disaster, because of lessons learnt about its adaptability and capability some six years earlier.

In January and February 2003 a fierce forest blaze, known as the Bogong fire in north-east Victoria burned uncontrolled for four weeks through more than one million hectares of land.

After a minimum of on-the-spot training, WICEN operators quickly became familiar with the Department of Sustainability and Environment (DSE) trunked radio networks and protocols. They were needed because the longevity of the fire had rapidly exhausted the DSE pool of operators.

This summer the DSE, which is responsible for fire response in publicly owned land such as national parks and reserves, requested WICEN operators being aware of this resource primarily as a result of the Bogong fire experience.

WICEN is listed in the Emergency Management Manual Victoria with the role of 'Provision of relief operators for other agency communications equipment.' That resulted in it being deployed to several centres.

Probably the busiest was the Incident Control Centre (ICC) at Alexandra in north-east Victoria where WICEN ran the radio systems as message handlers 24 hours a day with operator shifts of 12 hours.

Additionally WICEN provided communications between one of the worst fire affected areas, Kinglake, by setting up a radio link between it and the Shire of Murrindindi Municipal Emergency Coordinator Centre (MECC).

A vital role because the MECC is charged under the Emergency Management Act with responding to requests from emergency services for their resource and logistic needs.

WICEN operators also ran some Country Fire Authority (CFA) radio systems and demonstrated their flexibility and adaptability to handle its different protocols.

Since 2003 an emphasis has been placed on keeping WICEN operators skilled in using the trunk radio system, which is different to conventional two-way radio as it requires pressing buttons to get the required station.

WICEN Victoria provided refresher training courses for its members in December last on that radio system. Indeed that was excellent forward planning! In fact training and accreditation of WICEN operators has been given a high priority over the years.

Traditional role has faded

The role of radio amateurs to provide emergency communications in Australia began in the 1939 Black Friday fire disaster, and on later major occasions including Tropical Cyclone Tracy that hit Darwin in 1974, the Ash Wednesday fire disaster 1983, the Newcastle Earthquake 1989 and at time of floods.

On those occasions amateur radio mostly provided communications to fill the gap left when landline phones were knocked out, power had failed and emergency service radio systems overloaded.

This same traditional role was seen during the Indian Ocean Tsunami in 2004, the Great Sichuan Earthquake in China last year and after other emergencies around the world. A significant role continues to be played by amateur radio in other countries in establishing communication links after disasters.

In the mid-1980s and early 1990s WICEN could often provide superior communications to other services with the enhancement of the skills and operating knowledge of radio amateurs.

The Miller Inquiry into the Ash Wednesday disaster responded positively to the WICEN (Vic) submission on its role, which resulted in a strengthening of its reference in the State Disaster Plan (now the Emergency Management Act).

The Senate Standing Committee on Industry, Science, Technology, Transport, Communication and Infrastructure in 1994 said in part:

'WICEN is a volunteer group of radio amateurs with communications and information transfer skills and equipment. This organisation can be called upon by response and recovery agencies in the general community in times of emergency. WICEN's major role is the co-ordination of the response of the general amateur radio service in times of need.'

WICEN (Vic) has received many well deserved accolades, including one for its role in the lead up to the Millennium or Y2K bug on New Year's Eve 1999.

However in reality, communications technology and infrastructure has changed dramatically since the Ash Wednesday disaster with emergency and other services updating their systems and the arrival of the ubiquitous mobile phone.

Added to that is the policy of WICEN (Vic) to be a low profile organisation. That being in part due to the demands on it to provide cheap and reliable radio communications for sporting and other events, that it cannot meet.

But it may also have resulted in WICEN (Vic) *hiding its light under a bushel*, or not *blowing its trumpet loud enough* where it matters.

The fact is that circumstances have resulted in WICEN (Vic) not being in great demand in the past decade to carry out two of it functions under the Emergency Management Act that are:

Provision of communications or supplementary facilities for and between response and/or recovery agencies

Provision of communications to the community where conventional communications facilities are not available

The emergency response agencies are well geared up with their communications and there is a level of inter-operability that did not exist in 1983. Local Government

too has two-way radio systems that cover their municipalities.

The volunteer St John Ambulance is very well radio equipped and the Red Cross has its own RECOM communications arm. The Salvation Army, a range of government departments, Lions, Rotary and others involved in disaster recovery are well served by mobile phone.

Another change is that in 1983 prolonged periods without telephone service could be expected and there were no mobile phones. The major telco Telstra was quick to restore phone services this summer.

In an extraordinary and commendable display of customer service, Telstra used wireless technology including portable mobile phone cell towers, mustered 3,000 mobile phone chargers for bushfire victims and handed out mobile phones.

WICEN (Vic) did however have a role in providing personal communications for DSE strike teams at the McAdams Hill encampment near Matlock.

This was due to the capacity of the government radio system being required for essential fire fighting and logistical communications, and with no mobile phone coverage in the area WICEN admirably facilitated health and welfare traffic for the crews.

Electricity supply companies also responded to the Black Saturday disaster by restoring power within relatively short timeframes.

After the Ash Wednesday disaster WICEN was involved in the clean-up after the fires providing communications support. However in 2009 government has decided on a different approach of using a contractor for that work.

This is due to occupational health and safety concerns with hazardous substances within the ruins of the fires including asbestos and treated pine.

WICEN (Vic), all state and territory based WICEN groups and those radio clubs that have picked up emergency communications capabilities, will most likely need to review their roles.

Also to be noted are the changes to International Radio Regulations Article 25 adopted at World Radiocommunication Conference 2003. These place a much greater emphasis on the amateur service preparing for and meeting communication needs in support of disaster relief.

In 2007 the WIA national board of directors decided to take steps to improve the preparedness and capability of the amateur service in Australia to provide emergency communications. In a report to the WIA annual general meeting, its National WICEN Coordinator, Ewan Mcleod VK4ERM said that the WIA Board had decided that a new national network of emergency communications known as WIANNEC was needed.

This was to cover the wider Australasian Region and be in addition to, and complement the existing state and territory based WICEN capability. It has already resulted in Australia's regular participation in GlobalSET, a twice year world-wide simulated emergency test.

* The author Jim Linton VK3PC has written about emergency communications by radio amateurs since 1974, was a member of the WICEN representation team appearing before the Miller Inquiry and for the past five years has been the Chairman of the IARU Region 3, Emergency Communications Committee.

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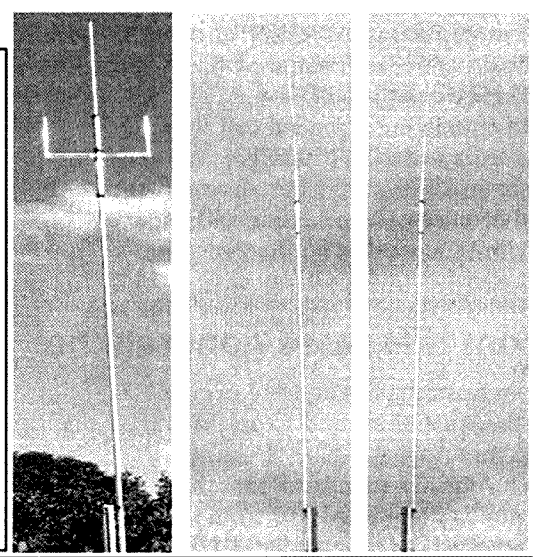
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Fires out but more to do

Jim Linton VK3PC

WICEN (Vic) had a total of 52 radio amateurs, including 36 WICEN members, deployed for 28 days in the mammoth response to the Black Saturday bushfire disaster.

Backing up WICEN members were 16 other radio amateurs including two each from New South Wales and the Australian Capital Territory.

Secretary Mark Dods VK3XMU said the activation under the Emergency Management Act of Victoria began on Monday 9 February, only two days after Black Saturday and it ended on 9 March.

"It went as well as possibly could be expected and began smoothly after a bit of apprehension that having been put on standby, deployment was not immediate," said Mark VK3XMU.

"The deployment resulted in the equivalent of 223 person days that included those assigned to radio operating duties at Incident Control Centres (ICC), a Municipal Emergency Coordination Centre and elsewhere, plus running the WICEN (Vic) HF net duties."

He explained that the days service count includes 12 hour shifts at outer metropolitan Incident Control Centres and airbases (where firefighting aircraft were controlled), and 24 hour periods of deployment to other locations.

It also takes into account six days spent repairing WICEN and other infrastructure with some of that work still to be completed.

In putting out a general call for radio amateurs to assist it, WICEN was very clear in stating that the environment and demands of working in an Incident Control Centre was not for everyone.

Mark VK3XMU said, "Operators were expected to work efficiently and accurately despite noise and plenty of distractions as these nerve centres of disaster response are hectic to say the least."

Some of those involved brought with them invaluable experience from the January and February 2003 Bogong fire or the Ash Wednesday bushfire disaster of 1983.

He said, "Indeed, many members deployed during this activation became members after participating in the 1983 or 2003 activations.

"We hope that when we follow up non-members who were deployed for this activation we will have a similar burst of membership applications.

"It is obviously far easier for us to communicate with operators whose contact details are in our membership database, and members are also made aware of training opportunities such as Statenet Mobile **Radio** (SMR) and CFA 'Maintain Safety at an Incident' training."

But the voluntary work of WICEN (Vic) is far from over as it is to take part in debriefings involving the police, Country Fire Authority and the Department of Sustainability and Environment.

Mark VK3XMU had plenty of paperwork to handle during the deployment and that task is to continue for some time yet. Another role was looking after the welfare of those deployed.

He said, "All who were deployed had constant support, were encouraged to ring me at any time to talk about any matter or issue."

"The HF net on 80 metres maintained during the four weeks also gave them a link back to WICEN Administration and a share of information."

Mark VK3XMU said WICEN (Vic) expresses its thanks to those who volunteered to assist during this time of need, and also keeping the HF net frequency clear.

Well done to WICEN (Vic) in its voluntary contribution to the disaster response. The deployment for the disaster reconfirmed the role radio amateurs can play.

It also provides an opportunity to consider how things were done well and to identify room for improvement.

The same debriefing process is occurring in all emergency services and response agencies. Proposed changes are also anticipated through the recommendations from the Royal Commission into the bushfires.

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Icom H/H sales generate hefty bushfire donation

Icom Australia has donated over $6000 to the Australian Red Cross Victorian Bushfire Appeal.

During the month of March, Icom Australia committed $10 from the sale of every IC-41S Handheld UHF CB to the Bushfire Appeal. The response from Icom's dealers was overwhelming, with many deciding to support a great cause.

The devastating bushfires in Victoria claimed some 173 lives, over 2000 homes were lost and more than 400,000 hectares of property affected. More than 7000 people were left homeless in the wake of Australia's most catastrophic bushfire on record.

Icom Australia would like to thank its dealers for all their amazing support, and wish those affected by the bushfires a safe and speedy return to their normal lives.

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The WIA Seeks Volunteers

The WIA needs help at its national office in Bayswater, Victoria.

Do you have the experience and background to help?

Can you assist for some hours on a regular basis?

Call Margaret or Dianne between 10 a.m. and 4 p.m.

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What do some amateur radio operators do in their spare time? Operate radio of course!

Arthur Greaves VK3FBEE

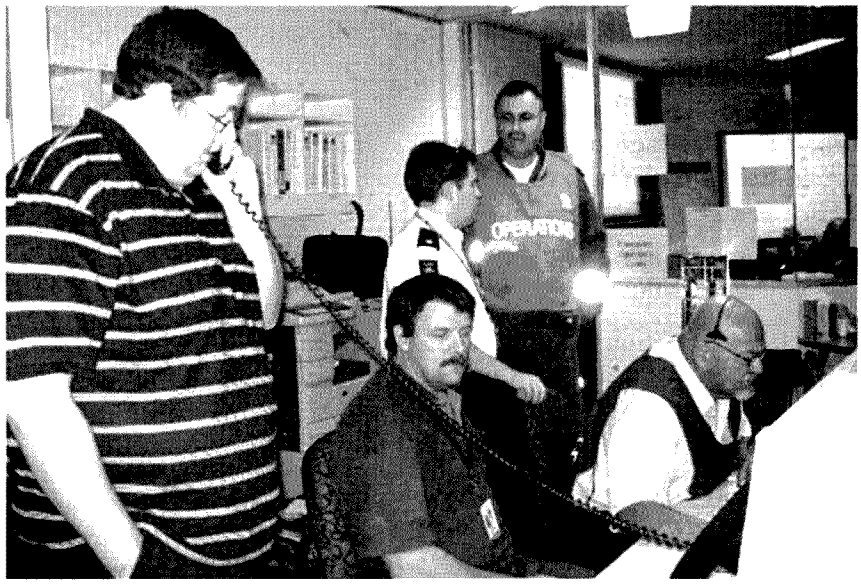
During the recent Victorian bush fires, this group of amateurs spent time in the St John Ambulance Headquarters Communications Centre.

St John Ambulance supplied 'First Aid' support into all areas affected by the fires. These 'First Aiders' were backed up by teams of people, who ensured they were supplied, relieved and looked after in the best possible way, all coordinated via the Communications Centre.

The Communications Centre was manned by St John communications specialists with assistance from others.

The group pictured share several common interests. All are amateurs, all are scouts, all are members of the Scout Radio and Electronic Service Unit, and two are St John volunteers.

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Left to right: Ben VK3HBN, Peter VK3ZPF, Greg VK3FUNK, an unidentified St John volunteer and Arthur VK3FBEE.

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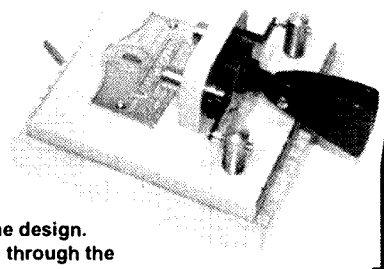
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An Active Loop Receiving Antenna for 7 ~ 29 MHz

Drew Diamond VK3XU

In circumstances where it is impractical to erect a conventional antenna, or where local noise is a problem, a workable alternative is to use a small receiving antenna. Some experimenters favour either an un-tuned or broad-band voltage-probe (or 'whip'), while others prefer an un-tuned loop, either of these then followed by a broad-band amplifier to raise the signal level to near that obtained from a conventional antenna.

A disadvantage of broadband antennas is that, in addition to the wanted signal(s), a host of strong but unwanted out of band signals are also presented to the receiver's input. If the receiver's front-end signal handling ability (intermodulation and pre-selectivity) is less than very good, then various undesirable effects will almost certainly occur.

However, if the antenna is resonated at the receiving frequency, the natural selectivity of the circuit will greatly attenuate the strength of out-of-band signals before they are presented to the front-end. Apart from positioning, the whip offers little discrimination against locally generated noise, whereas a tuned loop can usually be oriented to obtain a worthwhile, and often remarkable, improvement in signal-to-noise ratio (Reference 1).

Offered here are details of a simple tuned balanced loop antenna for sensitive listening between about 7 and 29 MHz (work is in-hand for a similar loop to cover 1.8 ~ 4 MHz). Internally generated noise is low, thus allowing sub-microvolt signals to be heard.

Circuit

A two-turn, 320 mm diameter, 2.7 micro-Henry coil, made from aluminium strip, is resonated by a two-gang broadcast type variable capacitor between 7 and about 29 MHz. The frame of the capacitor is connected to chassis ground, thus forming a balanced tuned circuit, which ensures that the loop is predominately responsive to the magnetic component of the incoming wave (simple unbalanced circuits may respond slightly to the electric component also, thus skewing the null in direction-finding applications).

For an electrically (and physically) small antenna, a substantial amount of amplification is required to raise the signal level to a value similar to that obtained from a 'full-size' one. Initial pre-amplification is provided by a balanced (or push-pull) pair of ordinary 2N5484 FETs (Figure 1).

The job of interfacing between the drains of the FETs, and the unbalanced coax line to the receiver's input, is done with a 'long-tail' pair differential amplifier (References 2 and 3).

The discrete

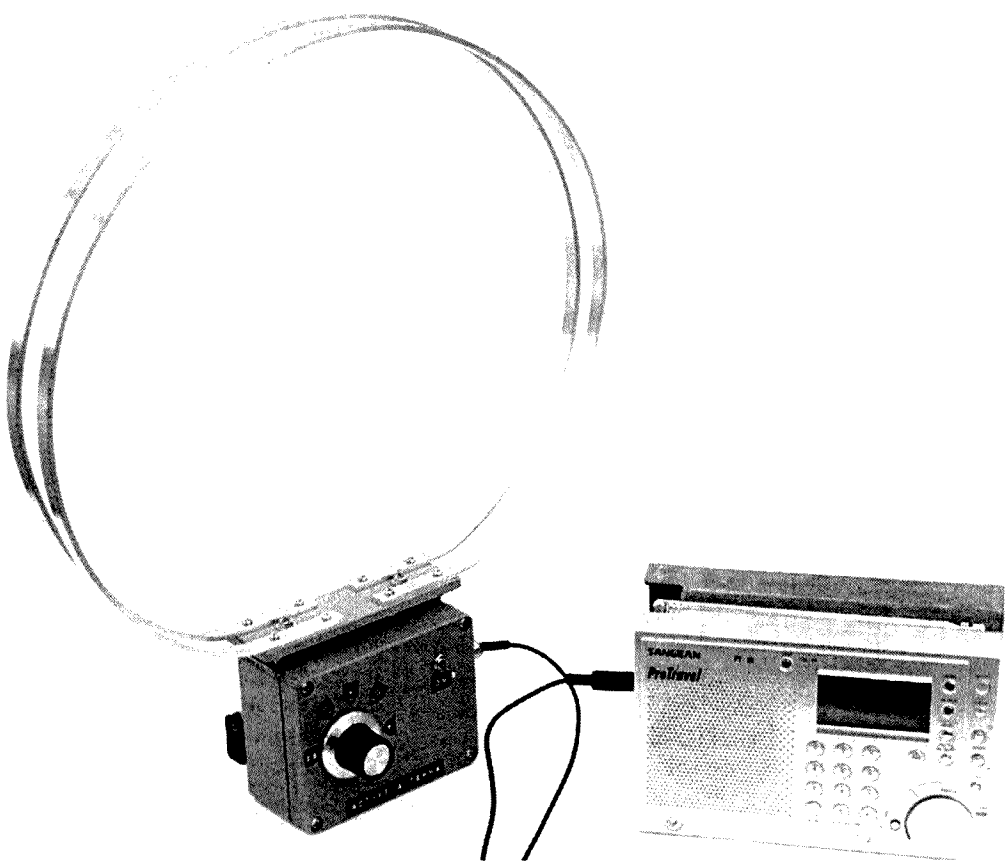


Photo 1: The active loop receiving antenna for 7 - 29 MHz in action.

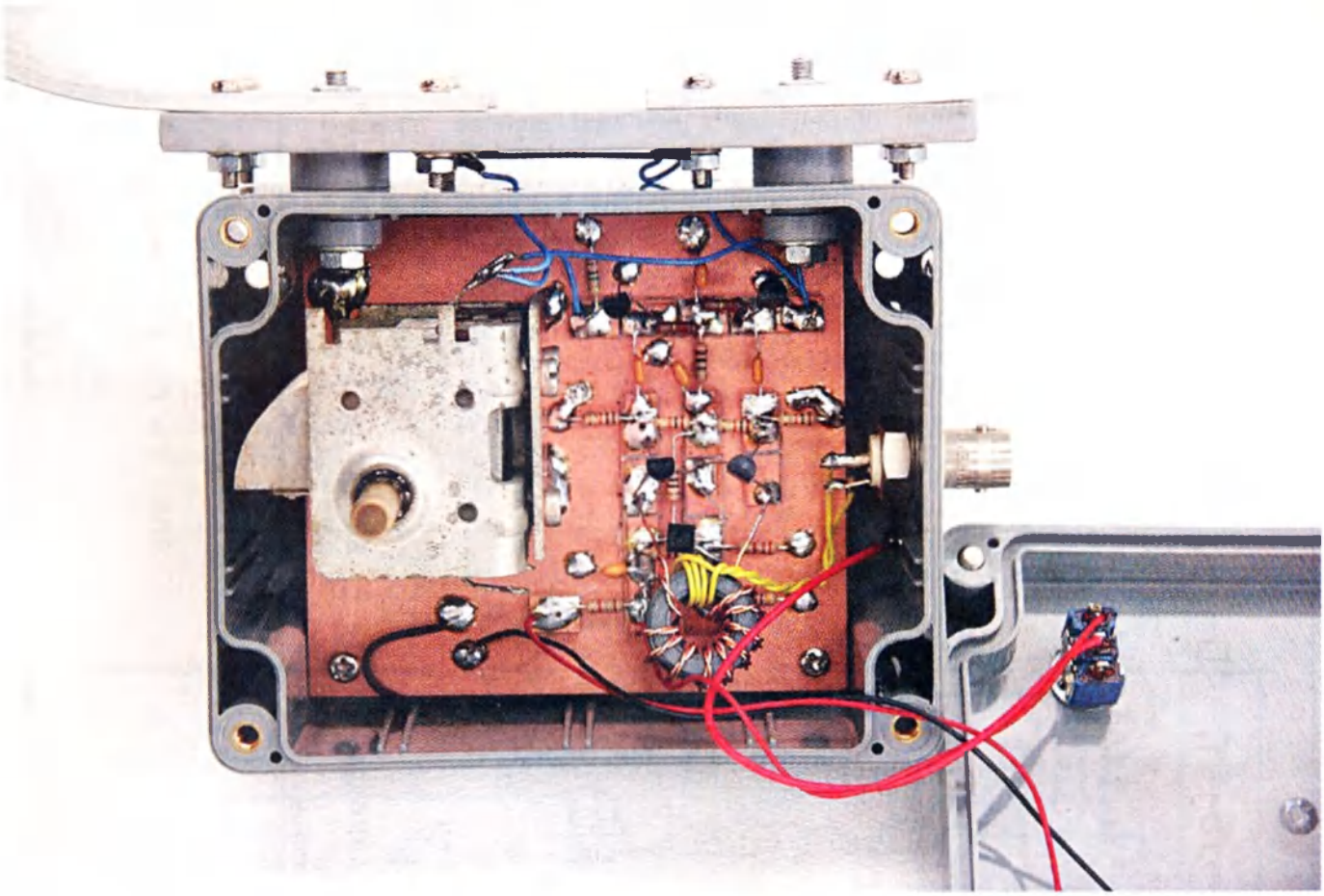


Photo 2: A view of the components mounted in the plastic box on the 'paddyboard' with the box lid removed.



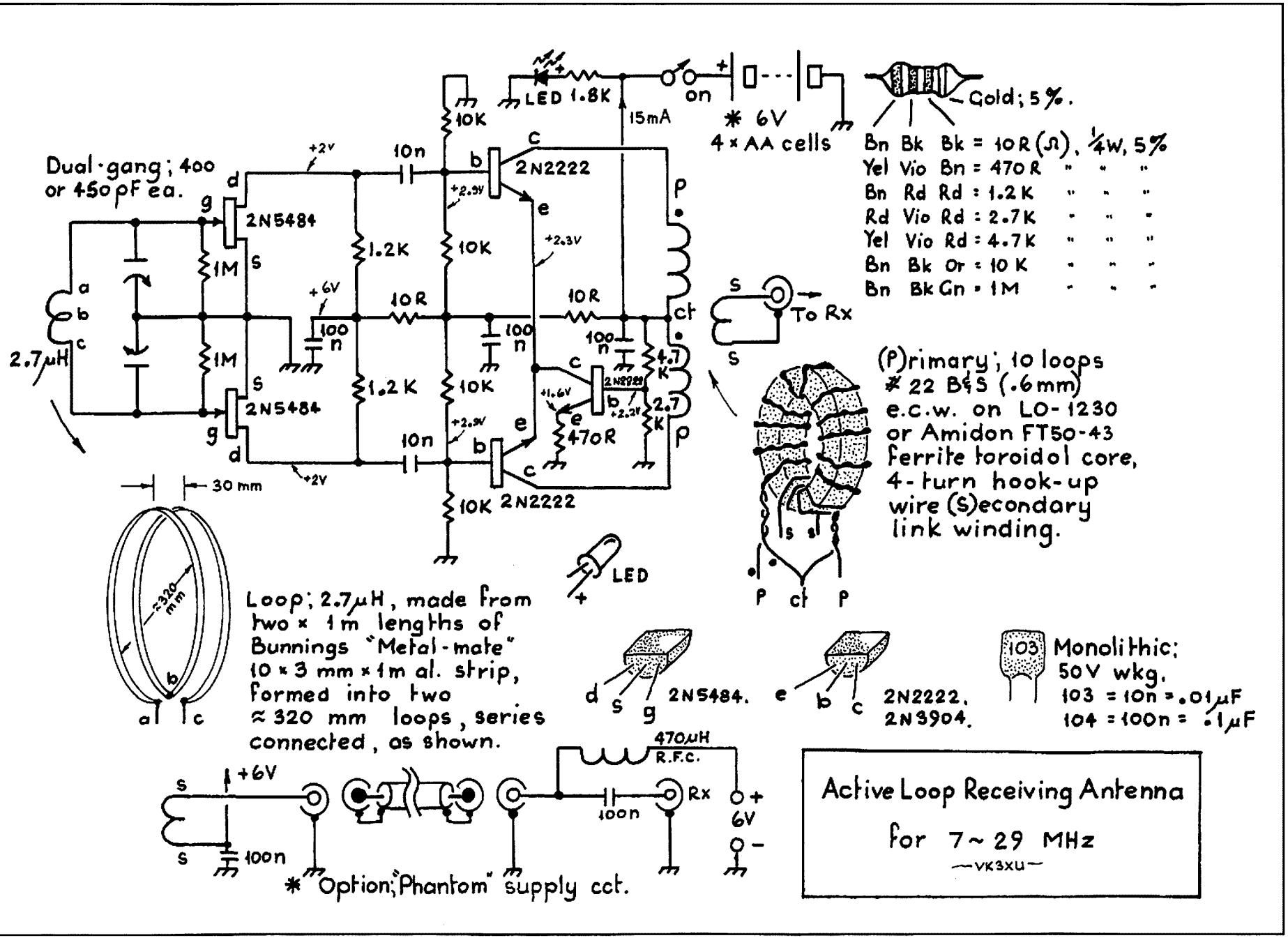


Figure 1: Schematic of the active loop receiving antenna for 7 - 29 MHz.

component configuration shown is modelled upon the classic CA3028 chip (unfortunately, no longer readily available), which provides further robust RF amplification of incoming signal(s). Their collectors are coupled to the receiver's input by use of a broadband transformer, whose bifilar wound (p)rimary provides a balanced load to the collectors of the long-tail pair. Signal is extracted via a four-turn link (s)econdary winding.

Construction

The prototype model is housed in a water-proof Jaycar ABS plastic box measuring 115 x 90 x 55 mm, P/N HB-6126 (so that, with a bit of extra work, the antenna may be installed outdoors).

Amplifier components are accommodated upon a 'paddyboard' (Reference 4) circuit board measuring 88 x 79 mm. A suggested layout is depicted in Figure 2. Alternatively, any preferred wiring style (such as 'ugly') may be employed, provided that component leads are reasonably short, and a 'ground-plane' circuit board is used.

Use super-glue, or preferably hot-melt glue, to affix the pads/strips upon the circuit board, whereby a tiny sliver of solid glue is attached to the underside (fibre) of the pad. Melt the glue evenly with a soldering iron, then place the pad/strip in the exact spot required. If you need to move a pad, apply the iron to the copper side of the pad to soften the glue, then remove and re-position as required.

The two-turn antenna loop/coil is made from two one metre lengths of 'Metal-Mate' 10 x 3 mm aluminium strip (from Bunnings). Each loop may be formed by wrapping the strip evenly around the circumference of an ordinary 20-litre plastic bucket. Place your feet firmly upon the handle each side of the up-turned bucket, then progressively and carefully 'form' the strip into a loop. Leave a small flat section for the 3 mm

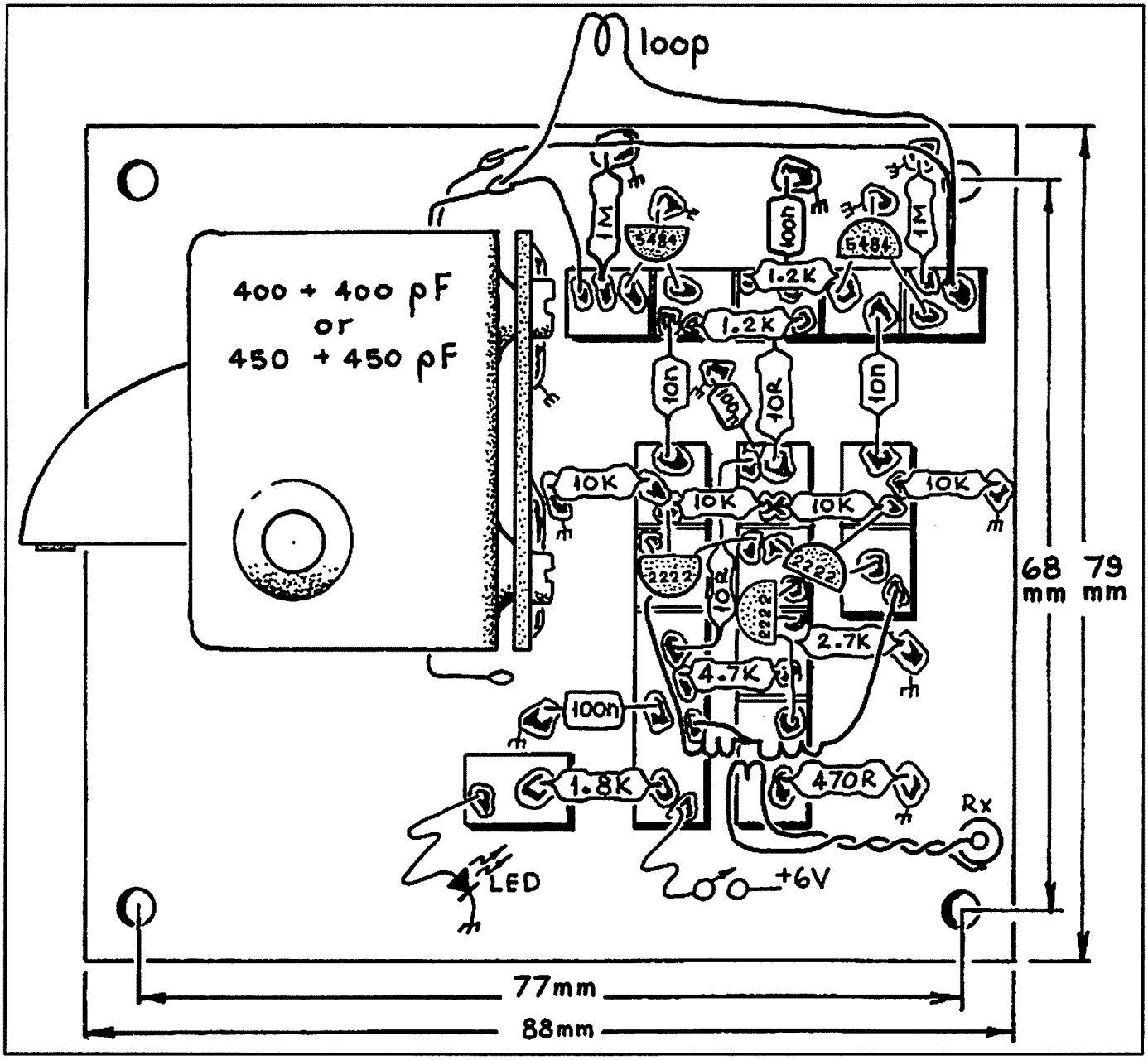


Figure 2: Suggested layout of the components on the 'paddyboard'.

mounting holes, which are drilled after the loop has been nicely formed.

Your loop may be fitted to a 125 x 40 mm rectangle of ABS, Perspex or similar insulating material, secured with three mm screws and nuts, that is in turn mounted atop the plastic box in a manner similar to that pictured in Photo 1.

Fit solder lugs under the nuts at the end of each loop. Using a short length of hook-up wire, connect the end of one loop to the start of the other (marked 'b' upon the coil in Figure 1) to produce an inductance of 2.7 micro-Henry. The loop assembly may then be fixed to the box with two four mm screws and nuts. An insulated spacer (made from scraps of ABS) will be required on each screw at the interface.

The variable tuning capacitor, visible in Photo 2, is a small 400 + 400 pF dual-gang MSP part salvaged from an old Australian broadcast set. These are fairly common around the swap-meets. Or you could use a similarly ubiquitous Philips 450 + 450, or a Roblan 450 + 450 pF. It may be that your capacitor can be fitted so that the spindle emerges at the side of the box, rather than the front.

The broadband output coupling transformer may be made as follows. Take two 370 mm lengths of #22 B&S/0.6 mm ecw (enamelled covered wire), fix them, jointly, at one end in the jaws of a vice.

Twist the free ends together similarly, then clamp in the chuck of a hand-drill. Whilst maintaining a tension on the pair, crank the drill until you have about three twists per 10 mm. Now give the drill a firm pull to 'set' the bifilar pair. Carefully wind the pair on to a Jaycar LO-1230, or an Amidon FT50-43 toroid - about 10 loops should fit nicely, leaving a gap for the four-turn hook-up wire link (s)econdary winding.

With a multimeter set to read ohms, identify the two (p)rimary windings, then connect the end of one to the start (dot) of the other, to form the centre tap (ct).

The six volt battery of four AA cells may be accommodated in a holder, such as the Jaycar PH-9204. It can be attached to the lower outside surface of the box with small screws and nuts, or simply fixed there with hot-melt glue. The LED is fitted into the front panel to serve as an 'on' and battery condition indicator.

Operation

Inspect your wiring and soldering for quality and accuracy. Confirm that the FETs and transistors are correctly fitted, and that your battery of AA cells is properly installed.

Connect the amplifier output to the receiver input using any reasonable length of 50 ohm coax cable. Switch on, then carefully adjust the variable capacitor for a peak in noise and/or signals.

If the band is in fair to good shape, the combo should sound quite lively. Any local noise or interfering signals should be reducible by careful rotation of the loop's plane.

My loop has been tested in all sorts of typical locations (some of them quite noisy) during our travels. It provides (perhaps surprisingly) good performance indoors.

However, at a distance from electric power lines and appliances, a portable receiver/loop combo gives excellent results. For receivers that have a DX/local switch (such as the popular Sangean and Degen sets), it should be found that the DX position is seldom required (thus giving better strong-signal handling).

As long as a reasonable separation is maintained between a transmitting antenna and loop, no damage should be caused to the amplifier or receiver. However, an accidental transmission into the output of the loop amplifier would be a different story!

Counter-intuitively, perhaps, the null is through the axis of the loop (that is, when the loop is 'broad-side on', see Reference 1).

A suggested circuit is included in Figure 1 to provide 'phantom' power for remote operation.

Parts

All the ordinary components are available from our usual parts suppliers, including Altronics, Electronic World, Jaycar, Rockby and Semtronics.

Sources of aluminium strip for the antenna loop coil, ABS Box, toroidal core and variable capacitor are mentioned in 'Construction' above.

You may well find (as is the case in nearby Ringwood) that off-cuts of ABS (and Perspex/acrylic) sheet is available from the scrap-box of your local plastic sign maker, free for the asking.

I am not in the parts business. Nevertheless, if, after earnest efforts, one or two items remain elusive, do 'phone me on 03 9722 1620, or drop me a line, as it may well be that I have spares on hand.

References and Further Reading

1. "Small Loop Receiving Antennas"; Joseph Carr, Electronics World, November 2000.
2. The Art of Electronics, 2nd edition; pp 98 ~ 104, Horowitz & Hill, Cambridge University Press.
3. Experimental Methods in RF Design: pp 2.16 ~ 2.18 (excellent), Wes Hayward et al, ARRL.
4. "'Paddyboard' Circuit Construction - Revised", Amateur Radio, May 2005.

Photos by Andrew Diamond

Amateur Radio

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If so, contact the Editor Peter Freeman VK3KAI at editor-armag@wia.org.au in the first instance for all the details of how to get into print.

A VK3ZRX short story

Dangerous Capacitors

John Morrissey VK3ZRX

Some years ago, there were a number of house fires caused by the Mistral Gyro-Aire fan, which was housed in a distinctive square plastic casing. I recall we had one of these, and that it too started to smoke.

On investigation I found that one of the capacitors in the electronic speed control unit had failed. The capacitor concerned was branded "AEE Miniprint" and I have since seen many of these fail over the years. My strong recommendation is that if you ever come across these in equipment, replace them immediately! They have a distinctive appearance, being encapsulated in a clear (or slightly yellowish to amber) coloured moulded resin which usually cracks with time. They appear to have been moulded rather than dipped.

In the past couple of weeks I have become the proud owner of a Hewlett Packard 8640B signal generator. When first powered up, it had distinct burning smells, but I was unable to find the source. I assumed that a tantalum power supply bypass capacitor (of which there are lots) had gone to tantalum heaven and that it had eventually failed open circuit. However after a couple of weeks, I needed to do repairs to the bandswitch/deviation switch assembly (a generic 8640A/B fault, but that is another story). With repairs completed, I turned the box over and it rattled - although I was sure I had not dropped anything. Sure enough, I found a piece of moulded plastic which looked suspiciously like part of one of the Miniprint type capacitors.

After a bit more searching I found it - buried in the mains input RFI filter assembly. It had failed in spectacular fashion, fortunately without setting fire to anything else. However this was not an AEE Miniprint - it was another brand, although in exactly the same moulded case.

The conclusion is that any of the capacitors with this construction should be regarded as suspect. They are commonly used as 240 V AC bypasses.

Also, anyone with an HP8640 A or B should investigate these caps as a matter of urgency. They are designated C6 on the power supply schematic, and are located at the rear of the power input socket - reasonably easy to get to once the socket is unclipped and withdrawn out of the back of the case. The capacitor is upstream of the power switch, so is always live and waiting to fail.

Even if you own other HP gear of this vintage (1970s), it would be worthwhile to check, as the capacitors may also have been used in other equipment.

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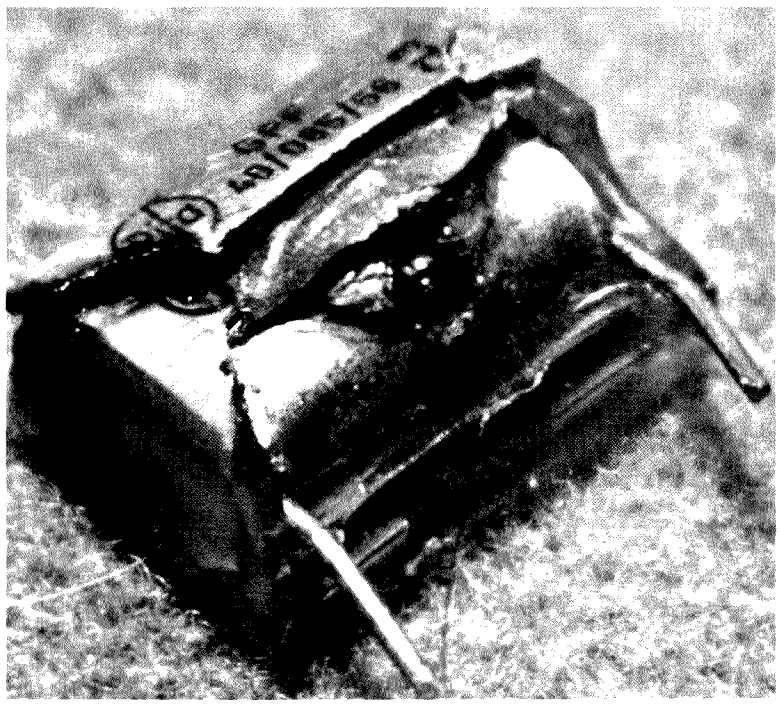


Photo 1 Front view of the faulty cap (you can just make out the brand name (RIFA).

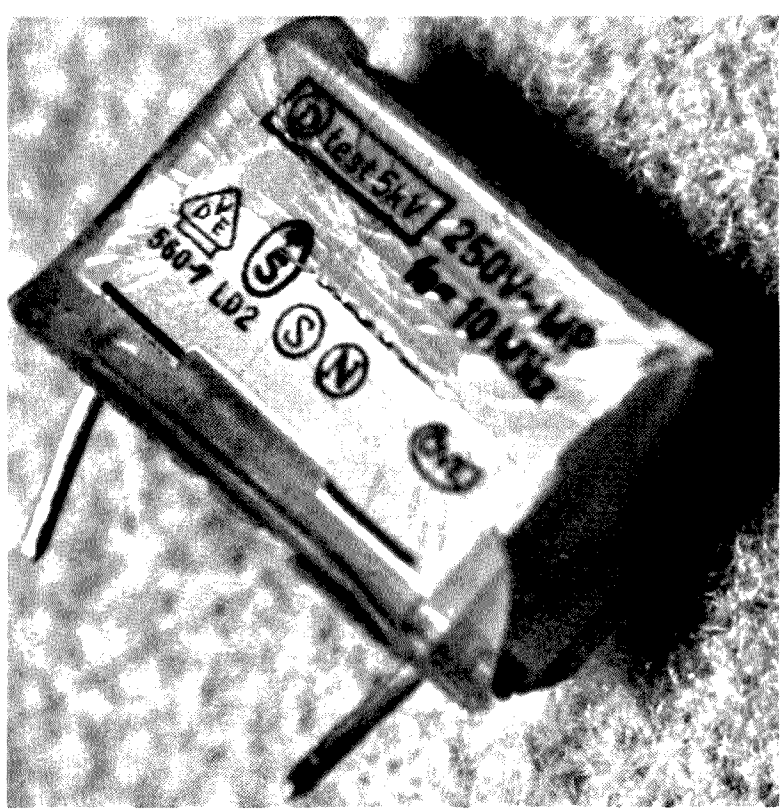


Photo 2 Rear view of the faulty cap.

Review

The Icom IC-7200 HF and 6 m 100 watt transceiver

Bill Roper VK3BR and Ron Fisher VK3OM

The IC-7200 is a compact (241 x 84 x 281 mm – 5.5 kg in weight) HF and 6 metre, DSP, 100 watt (variable down to 2 watts) output transceiver on SSB, CW, AM (25 watts output only on AM), RTTY, FSK, and SSTV/PSK31, but with no FM facility. It is a triple conversion radio, the first IF is at 64.455 MHz, a second IF at 455 kHz and the third IF at 15.625 kHz where the DSP circuitry operates.

Although it is compact, it does not seem entirely suitable for mobile operation, even though a mobile mounting bracket (MB-118) is available as an optional extra. However, it is ideal for portable and field day operation, as well as for the compact home shack.

Although the IC-7200 is not water proof, the construction methods that are used in Icom's marine radios are applied to the buttons and knobs on the front panel to provide a measure of protection against water intrusion.

Even though the IC-7200 could be classed as an entry level transceiver, its advanced digital features are comparable with those in many higher class transceivers. For instance, it has IF DSP providing a wide choice of receive bandwidths, very effective digital twin pass-band tuning, a superb manual notch filter (up to 70 dB attenuation) as well as an automatic digital notch filter, excellent digital noise reduction in addition to a noise blanker, and an RF speech compressor.

As can be seen from the photo of the front panel, the IC-7200 has followed what seems to be the current fashion in amateur transceivers in having black knobs and buttons on a black background. Fortunately, the various controls are clearly lettered. Also, for such a small front panel, which also includes a speaker, the controls are a good size and well spaced. This is because there are fewer front panel controls than would be normal for such a complex little rig, which is a result of most controls and buttons having multiple functions. More about that later.

The IC-7200 conveys the solidity of a military mobile radio set. We found the overall feel of the main tuning knob and other controls to be smooth and pleasant. The rugged construction of the case and the front panel, with the positive feel of the Neoprene push buttons, adds to this impression of a very solid rig.

The main tuning knob, with its chunky synthetic rubber grip, has a very smooth feel with no apparent side-play. The other rotary controls also have a positive and comfortable feel, particularly the large, concentric twin PBT (pass-band-tuning) knobs. The centre detent enables setting the twin PBT knobs to the neutral position.

This solidly constructed transceiver



Photo 1: A front panel view of the IC-7200 propped up on the supplied bail. The HM-36 hand microphone that comes with the radio gives an indication of the compact size of the transceiver.

has a rear bumper which protects the rear-panel connectors and heat-dissipator fins. Optional front handles (MB-116) will protect the front panel and its controls from accidental damage. A side carry handle (MB-117) is also available as an option.

Front panel and features

Although the IC-7200's monochrome (black on an amber background) LCD display is relatively small (64 x 24 mm), we found it sharp, and very legible, even to our aging eyes. Contrast was more than sufficient for comfortable viewing in bright light. The backlight settings are high, low and off. High, which is quite bright, is the default. Filter selections and feature activation are displayed via on-screen icons. Although some of these are rather small, we found them quite readable.

A very useful aid is the voice synthesizer, which is a standard feature. This function, at the push of the SPCH button alongside the On/Off button, announces the S-meter level, operating frequency and mode (the S-meter level announcement can be deactivated) in a very clear, electronically generated voice, in English. Only a quick push on the button is required. We found that if we pushed the button for any length of time it activated the controls Lock mode, and not the voice synthesizer.

A feature of the front is the inbuilt speaker. Although a small unit, the quality of received voice transmissions is surprisingly good. Obviously the frequency response of the speaker has been carefully optimised to the receive characteristics of the transceiver. Although the quality of AM broadcast station reception was quite good on this inbuilt speaker, quality can be improved by plugging in a larger external speaker.

As mentioned above, the main tuning knob has a very smooth action. Programmable tuning steps are available to suit your operating requirements. These are selectable from 0.1, 1, 5, 9 and 10 kHz tuning steps when rotating the tuning knob. When the 1 Hz step is selected, the 1 Hz digit appears in the frequency readout; when the 10 Hz step is selected, the 1 Hz digit disappears from the frequency indication. Turning the knob faster increases the tuning rate, which is a particular boon when using the 1 Hz tuning step rate.

The IC-7200 uses a high stability TXCO (+/- 0.5 ppm), and twin A and B VFOs are selectable with the A/B button. Multiple band-stacking for each band, a feature of other Icom radios, is not available. Single band-stacking is used, however, which means that each time you return to a band,



Photo 2: A view of the rear panel of the IC-7200 with the PSU cable plugged in. The connection to the external ATU is to the left of the power plug; the USBB connector is to the left of the Remote and External Speaker jacks.



it will show the last frequency used on that band as well as the mode.

Most of the front-panel buttons have secondary functions which are accessed by pressing and holding the button for one second. The digit-entry function of the numerical buttons is a secondary function, and is entered by first pressing the F-INP key. The yellow numerical digits are a clue to this, as the F-INP marking is in yellow. The secondary BAND (band-selection) function of the F-INP key is marked in white, in keeping with the band markings on the numerical buttons. Obviously band selection is the tertiary function of these buttons. This may sound confusing, but the process becomes intuitive very quickly, although it takes a while to get used to pressing two buttons to change bands.

The IC-7200 has 201 memory channels, 1-199 for regular memory channels, and P1 and P2 for scan edge memory channels. Each regular memory channel shows a frequency and operating mode like a VFO. Even if the frequency or mode is changed, the memory channel does not memorise the new frequency or operating mode. When the memory channel is selected from another memory channel or VFO mode, the memorised frequency and operating mode appear even if the memory channel settings, frequency and mode, are changed before selecting another memory channel or VFO mode. A memory channel's frequency and mode can be transferred to a VFO while in the memory mode.

The memory scan can be set to pause for 10 seconds when detecting a signal, and then resume the scan. When a signal disappears while the scan is paused, the scan resumes two seconds later.

The SET menu, familiar to other Icom DSP radio users, has two levels, accessible by pressing and holding the M-CH/RIT button. Press and hold once to enter the QUICK SET menu (transmit power output, MIC Gain, etc). Press and hold again to enter the in-depth SET menu. The MCH/RIT button is also an EXIT key. Similarly, M-CL restores a selected parameter to its default value.

The RIT function shifts the receive frequency up to ±9.999 kHz in 1 Hz steps (10 Hz steps when the 1 Hz step readout is cancelled) without moving the transmit frequency.

At first, we found RIT activation confusing. To change the M-CH/RIT control to RIT, the RIT button must first be pressed to activate RIT. The M-CH/RIT knob will switch to RIT automatically when RIT is active (RIT icon displayed). When first pushed the shift frequency is indicated for about one second. Similarly, when changing the RIT frequency by turning the M-CH/RIT knob, the shift frequency is displayed. A few attempts to use the RIT function while following the User Manual will unravel the complexities of RIT operation.

There is no doubt the RIT function is very useful and the initial confusing complexity of using this feature is a by-product of multi-function buttons.

The receive filter selection and adjustment procedure is similar to that of other Icom DSP radios. You press and hold the FILTER button for one second to adjust the filter bandwidth between Sharp and Soft. Quick presses of the FILTER button changes the filters to Wide, Middle or Narrow.

The filter bandwidths, which are continuously variable, are different for the various modes. On SSB the filter bandwidths are variable from 50 Hz up to 500 Hz in 50 Hz steps, then up to 3.6 kHz in 100 Hz steps. On AM they are variable from 200 Hz to 8 kHz in 200 Hz steps; and on RTTY they are variable from 50 Hz to 500 Hz in 50 Hz steps and then in 100 Hz steps up to 2.7 kHz.

The default settings for SSB are 3.6 kHz in Wide, 2.4 kHz in Middle and 1.8 kHz in Narrow.

Of course, the selectivity of the DSP filters can be enhanced by use of the twin Pass-Band-Tuning controls. The general PBT function electronically narrows the IF pass-band width by shifting the IF frequency slightly outside the IF filter pass-band to reject interference. The IC-7200 uses DSP for the PBT function. By rotating both TWIN PBT controls (inner/outer - PBT1 and PBT2) together, the PBT functions as an IF shift control. The limit of the variable range depends on the pass-band width and mode. The limit of the variable range is half of the pass-band width, and PBT is adjustable in 200 Hz (AM) or 50 Hz (other modes) steps.

The CW Pitch control is a QUICK SET menu item, rather than a separate control. The received CW audio pitch and monitored CW audio pitch can be adjusted to suit your preferences from 300 to 900 Hz in 10 Hz steps without changing the operating frequency.

Pressing the P.AMP/ATT button turns on the receiver preamplifier to improve the S/N ratio and sensitivity when receiving weak signals. Pressing and holding the P.AMP/ATT button for one second inserts a 20 dB attenuator in the RF signal path, in place of the preamplifier, to minimise very strong signals near the desired frequency from causing distortion of a received signal.

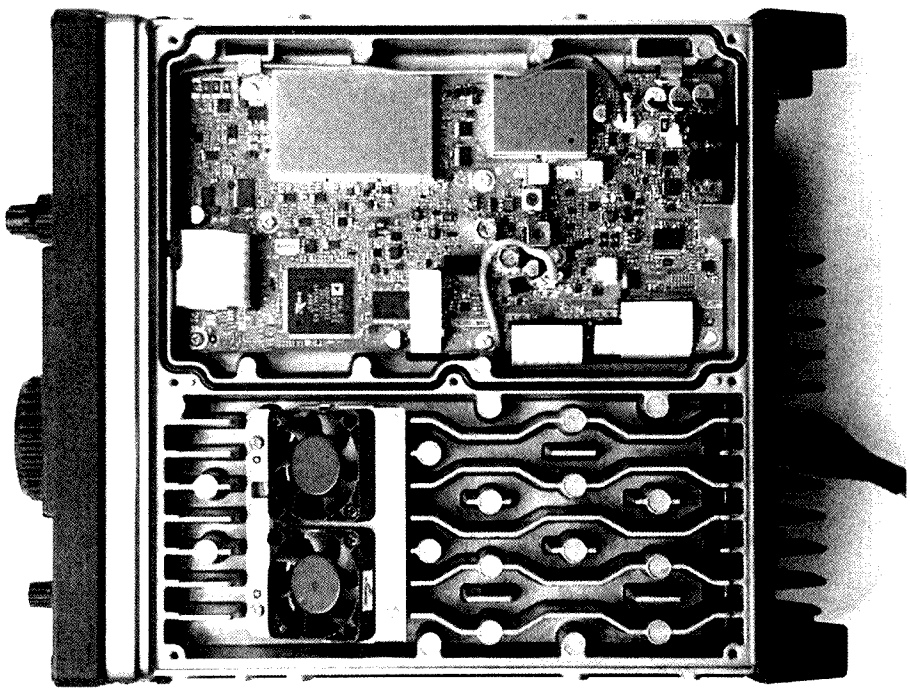


Photo 3: A view inside the top of the IC-7200 clearly showing the twin cooling fans and the extensive cooling fins and ducting.

The tuneable Manual Notch Filter is inside the AGC loop, and is extremely effective with a stop-band attenuation of at least 70 dB. The MNF has three width settings (Wide, Mid and Narrow). The manual notch suppresses an interfering carrier before it can stimulate AGC action, thus preventing swamping of the AGC by an adjacent notched signal.

The Automatic Notch Filter is post-AGC. It suppresses single and multiple tones, but strong undesired signals can still cause AGC action and swamp the receiver. The MNF and the ANF are mutually exclusive. The ANF is inoperative in the CW mode.

We found the DSP Noise Reduction function to work very well in a normal, noisy suburban location. On SSB the maximum noise reduction occurs at a level setting between 6 and 10 (maximum setting is level 15). As the noise reduction level is increased, there is some loss of highs in the received audio as well as a drop in audio level, as would be expected with digital noise reduction. Also, as the level is moved higher than about 6, the received audio seems to take on a hollow sound. However, in our use of the transceiver for normal SSB operation, the NR was switched in all the time.

We also found the DSP Noise Blanker to be somewhat more effective than the usual analogue noise blanker used in many other transceivers. It will strongly attenuate fast-rising noise pulses, but is less effective on power-line hash. The NB worked noticeably better when used in conjunction with the digital noise reduction.

Metering is provided by a bar graph in the bottom right hand corner of the digital display. In receive the bar graph acts as an S meter from S1 to S9 plus 20, 40 and 60 dB over S9. Three selectable transmit meter scales are provided – PO (RF output), ALC and SWR, but only one is in operation at a time. You hold the ANF/METER button for one second each time to toggle between the three transmit functions.

The IC-7200 has only two transmit audio menu items, Mic Gain and compression level. The DSP IF-level compressor is similar to that provided on other Icom DSP radios. It works very smoothly, and does not distort at the default compression level value of 5 (approximately 6 dB compression).

The US version of the IC-7200 operates on the US 60 m band. We understand that, in order to ensure FCC compliance on 60 m, no transmit bandwidth or equalization menus are provided, even on the version of the IC-7200 being sold in Australia without 60 m capability. This lack of ability to vary the transmit audio characteristics is unfortunate. Using the standard Icom HM-36 hand microphone, the reviewers found the transmit audio to be quite bassy and lacking in high frequencies.

However, when not doing a comparison check of the IC-7200's transmit audio quality against another transceiver, it must be admitted that in many QSOs on-air other amateurs said that the IC-7200 audio was easy to copy.

We understand from other sources that substituting another microphone, such as the Heil GM-5 microphone, can change the transmit audio characteristics considerably for the better.

Incidentally, one of the features not included in the IC-7200 is a transmit audio monitor.

Back panel

The rear panel of the IC-7200 is uncluttered and provides many of the usual transceiver interfaces including connections to an Icom automatic antenna tuner, the Icom IC-PW1 1 kW solid-state linear amplifier, as well as relay and ALC connections for a non-Icom linear amplifier. Also included are connections to a CW key, an external speaker, the very solid DC lead, three metres long fitted with the now standard four-pin connector and two plug-in fuses and, of course, the antenna.

Another connection on the IC-7200 rear-panel is a USB port enabling the radio to be directly connected to a laptop or other PC via a standard USB cable. The USB port transports not only CI-V data, but also Tx and Rx PCM baseband between the IC-7200 and the computer. As a result, the USB cable is the only radio/PC connection required. For those interested in connecting their IC-7200 transceiver to their computer, for example to be able to view PSK31 and RTTY traffic and waterfalls, the Icom USB drivers are downloadable from the Icom Japan world-wide support site.

All back panel connections are indicated with raised lettering (see the photo of the rear panel).

On the air

It is a simple procedure to get the IC-7200 on-air; simply connect up a suitable antenna and PSU. The PSU requirements are 22 amps at 13.8 volts on full power transmit and only 1.3 amps on receive. The new standard four pin power connector is used, which the reviewers once again found very difficult to disconnect from the transceiver until we read the instruction manual!

As mentioned previously, changing bands is a little more complicated than on most transceivers. However, once the procedure is understood, it is quite straight forward.

The audio quality on receive from the small internal speaker is surprisingly good, very much better than we expected. One of the receive audio checks we make on reviewed rigs is to check audio quality on AM broadcast reception. Many transceivers reviewed in the past have been quite disappointing in this respect. However, AM reception on the IC-7200 was excellent, but intriguingly was better on the 6 kHz bandwidth reception than on the 8 kHz bandwidth reception.

Even though the audio from the inbuilt speaker was very good, nevertheless, as expected, the audio from a good quality external speaker was even better.

All in all, despite the small size of the transceiver, it was a delight to use once we became familiar with the multi-function controls.

We were favourably impressed by the IC-7200's solid construction (even though the appearance is metallic, the case is made from plastic). We were also impressed with the smooth operating feel of the transceiver, its impressive array of features and its good on-air performance. This is a lot of radio in a compact package.

We can thoroughly recommend the IC-7200 transceiver as a worthy addition to the comprehensive Icom range of transceivers. It is very good value for money.

The recommended retail price of the IC-7200 is around $1,750, but may be available cheaper by shopping around.

A number of accessories are available, including external automatic ATUs, a carrying handle and front panel handles, etc. Consult your local Icom dealer for more details.

All photos by Bill Roper VK3BR.

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Off Centre Fed dipole (OCF)

Ron VK3AFW

Ron VK2DQ is to be congratulated on his excellent article on the OCF dipole (AR Jan-Feb 2009) and the baluns he used. There are three points on which I would like to comment.

Yes the wire is a feed line.

The single wire feed line has been credited to Frank Conrad 8XK of Westinghouse. Major General Loren G Windom published comments on adjusting an OCF antenna in QST in July 1926 and in QST Sept 1929 published an improved design. It was stated by him to be a description of work done by two students Everitt and Byrne in his faculty. The first use of the name "Windom" appears to be by the Wireless Institute of Australia which in 1930 published an article which was substantially a reprint of Windom's QST article.

A single wire parallel to the ground provides a feed line with a characteristic impedance between about 100 and 400 ohms depending on its height above ground. The earth forms one part of the transmission line and the wire the other part. If the wire slopes then it no longer has constant impedance. The section nearer the ground has a lower impedance and the higher part a higher impedance. This means that it will have a standing wave due to mismatch no matter whether it is terminated in its characteristic impedance at the matching port or terminated by some other resistive load. The VSWR when connected to a Windom will typically be in the region 2:1 to 5:1 at resonance. This is acceptable for a wire transmission line.

So Windom was able to feed his half wave dipole with a single wire and get much of his transmitter's power to be radiated by the horizontal section. His 40 m signal was said to be outstanding.

There is no doubt that the wire feeder will radiate maybe 25% of the power it is fed and that this will be largely vertically polarized.

By bringing the feeder away from the antenna at right angles for a respectable distance the problems of noise pick-up, excessive feeder radiation and interaction of the radiation patterns could be kept within acceptable bounds.

The quarter wave mentioned seems to have gained currency for no good reason. A greater distance would be better.

Of course these days we can avoid the radiation from the feeder by using a coax feed and a balun, but neither existed in the 1920s. It also means that the feed line can be any length without much consideration of possible interactions with the dipole or the environment, providing it runs at right angles to the dipole for a reasonable distance (a quarter wave maybe?).

The second point is that contrary to what is said by many the antenna does not resonate at exact even multiples of the fundamental resonant frequency.

Due to the "end effect", the 40 m resonance for example occurs higher than twice the 80 m frequency. This can be explained as follows:

The 80 m resonance is reduced by about 5% over the theoretical free space length based on an infinitely thin conductor. On 40 m the antenna is two half waves, and the two "ends" of the half wave that occur along the dipole are unaffected by end effect, so the 5% frequency reduction does not apply. The ARRL "Handbook" (p 595, 1977 Ed) gives a formula as follows:

$F = 150 * (N-0.05)/L$

where F is the resonant frequency in MHz, N is the number of half waves and L is the dipole length in metres. (I have made the conversion from feet to metres for this letter).

If the 80 m resonance is on 3.60 MHz, then the even harmonics are actually: 7.58, 15.16, 22.74 and 30.31 MHz. I have found the ARRL formula to be pretty close to what happens in practice. These numbers also agree well with an antenna simulation software program that I have run in the past.

Adding capacitance hats to the dipole at the voltage peak point for 40 m will help on this band but additional capacitance hats will be required for all voltage peaks on each band, making the antenna more complex to build.

The use of an ATU cannot be avoided except perhaps on one band.

Finally, the feed impedance may be about half the figures given by Ron if the dipole is in an inverted vee configuration. I have also found that at an average height of 10 m the feed resistance at resonance for the 1/3 tap point varies from around 100 to 200 ohms. This has been checked by both simulation and measurement. One author suggests using an 80/20 tap position so that 30 m presents a useable VSWR. I have not investigated this suggestion.

While there is no simple cheap antenna that gives fantastic performance on all HF bands, Carolina Windom included, the OCF does a commendable job on three bands. The SWR etc will be dependent on any variations in the design and the actual installation details.

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South East Radio Club 2009 Convention

June 6th and 7th long weekend

Australian Fox Hunting Championship

Tea, coffee, hamburgers and soft drinks for sale

Commercial displays Pre-loved radios

Home Brew Contest Massive lucky door prizes Raffle

Please note: doors open at 13:00 Saturday

For more information phone Wayne or log onto our web site and follow the links to the convention pages.

http://serg.mountgambier.org/

For info or table bookings contact Wayne VK5ZX on

(08) 87254335 or 0407 718908

John Moyle Memorial National Field Day

Clubs all over Australia take to the field for the JMMNFD. Here are some of the reports.

WANSARC

John Moyle Memorial National Field Day

John Joseph Karr VK3FMPB

It has not rained properly in Melbourne for ages. WANSARC members go into the field for only two days in a year, our family day at Bundoora and now the John Moyle competition, and it rains on both events. If we extrapolate that we could say that WANSARC has the answer to the drought. Attempt to hold a field day or family day and just watch the skies open up. Could that be the answer, run field days every weekend until our dams are full again?

Of course, amateur radio, saving Melbourne one rainy weekend at a time.

The skies looked foreboding as if telling us of the impending storm. Did we take any notice? No. Did anyone see the storm clouds to the west? Nah. We just put our heads down and our bums up and we build on regardless.

We arrived at our clandestine QTH from about 0800 and people just kept on rolling up until about 1000. That was on top of a few keen members who spent the night here.

As I look out of the window of my temporary office. I can see people busily setting up towers, verticals, beams, long wire antennas, more beams and another mast as well. Personnel present on the day were VK3s VCL, EL, NE, MRT, FTDX, EB, DWH, ZO, DKM, NQ, FJPM, HDX, PI, FY, FNIK and yours truly, VK3FMPB.

14 members on different bands, the sun did not stop us last time and the rain would not stop us this time. We hope. Some of the bands we contested on were 23 cm, 70 cm, 2 m, 6 m, 10 m, 20 m, 40 m, 80 m and 160 m. If you really want the points you have to put the effort in. We are one club who is not afraid to put that effort in.

We employed a rotational system of operating masterminded by Wayne VCL. Keep the troops fresh and keep 'em keen.

The weather was with us when we arrived then it turned against us and again later, with us. Oh, it is Melbourne, this happens all the time. That necessitated two changes of clothes for some of us. It got pretty cold at times. Then it got warm. Then it got cold again.

The contest seemed to be going ok with most of our stations making contacts and scoring points for WANSARC.

The troops working the radios seem to be happy little Vegemites and everybody seems to be making contacts. The weather has belatedly fined up and all is well at WANSARC.

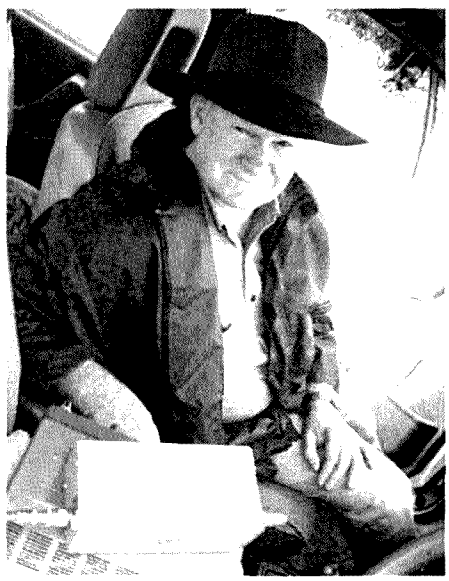
Our operators seem to be doing well. Mark PI's voice is heard booming out over portable radios on people's belt buckles all over the camp site.

Lunch time and Rod VK3MRT mans the BBQ and turns out some lovely snags and burgers, add coleslaw to that and you have a nice lunch. After that you have seconds and thirds and our next family day will be at a weight loss centre. VK3TOOFAT!!

One factor that is definitely noticeable is the spirit of co-operation among the more than a dozen members present. Different people take different tasks like cooking, cleaning, entering data into computers, manning the different radio stations. Helping each other where we can: a co-operative effort on John Moyle Field Day 2009 from WANSARC members. That is what we do: "Teamwork".

As the day wears on, new stations come on to the airwaves. We pounce on them. We try new antenna configurations, beams on 2 m, beams on HF.

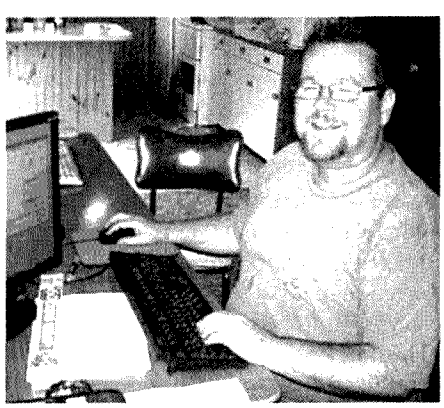
Another important job on John Moyle day, at least as important as the talking, is to log all the contacts we make, or the work we have done or it all comes to naught. Rod MRT is on charge of that job. Rod sits at his computer logging entries as they come in, and that is no mean feat. With five or more stations



President VK3NE operating from his car.



Frank VK3ZO operating on HF.



VK3MRT inputting the data from log sheets onto the computer logs.

operating it means the forms come in hard and fast. Especially at the end of a 3-hour period when all stations arrive with forms in hand at the same time. There must be a better way to do it than that.

Another meal at 1730 and we have finished the food quota for the day. Thanks Trevor and Rod.

The last session of the day was from 1800 onwards. We make plans to do a last session but the weather has different ideas. It was been cold for most of the day but now the weather is really starting to get nasty. The wind has blown up a mini gale and we have tents and masts falling over and being pulled down for safety's sake. The rain has whipped up anew and it becoming quite cold and uncomfortable at our QTH. The black clouds are rolling in over the top of us and the wind seems to be getting stronger. It all seems a bit dangerous now.

Masts high in the sky seem shaky especially as some have four or more antennas on them. We had about four or five masts up on the day. Thankfully at WANSARC we know a thing or two about construction and safety and not a mishap or injury was had on the day. That is not to say it was not a little frightening in the middle of that gale.

An executive decision is made by VK3NE to abandon the competition in favour of safety. Pull 'em down he yells, hardly being able to be heard over the wind and rain.

People, men, start dismantling their radio stations. Guy wires come down as did masts and antennas simultaneously all over the area. What took us most of the morning to erect took us 30 minutes to dismantle.

Trevor's (FTDX) mast and HF beam is proving to be a handful, get a few blokes over to him, quick.

Graham NE starts pulling his mast down but it is also proving to be a handful. At least it is bolted to his trailer. Four blokes helping him makes it possible to do that safely however. As I mentioned previously teamwork is what we do. All down and safety is restored, the wind even died down for us.

Time to debrief and a final chat and we are all finished. Thankfully.

Cheers John VK3FMPB WANSARC

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The nerve centre being used half capacity. L to R: Trevor VK3FTYDX, Frank VK3ZO, Bob VK3EL in door way, Victor, Dan (standing), VK3DWH and Rod VK3MRT on computer closest to camera.



Is that a mast or a Bazooka? VKs 3 EB, EI, VCL, DWH, MRT either attempting to lob one into enemy territory or putting up a mast.

Redcliffe Radio Club VK4IZ at the John Moyle Memorial National Field Day Contest

Mal Smith VK4UMS

The Redcliffe Radio Club (RRC) competes in the John Moyle Memorial National Field Day contest under the callsign of VK4IZ at the picturesque bush setting of Murrumbong Scout Campsite located about 40 km north of Brisbane

The RRC uses this annual contest weekend as a recreational activity, operator skills development camp, training for emergency operations (WICEN and SES) as well as instruction training and running exams for new licensees. Practice makes perfect so they say, and the contact count rose from 920 in 2008 to 1225 this year including Morse.

The RRC has a very diverse spread of member occupations from the electrical and building trades, medicine, engineering, law and of course, the grey nomads. All members bring their lifestyle and work skills and disciplines to the club activities.

The week before there was a meeting where all club members and committee reviewed the plans and organised the shipment and setup of the site.

On the Friday, some of the club members are able to pack up the equipment and set up ready for the weekend. John VK4YJV brought out his large crane truck and attached the 20 m monoband Yagi to the boom and was able to swing up the assembly by the flick of a lever to about 10 m ..... and it was secure. There was a slight problem as to which end was which and where it was pointing. A piece of cloth was tied to the pointy end and the controller relocated next to the door so you could see what you were doing, just too easy.

Running radio transceivers and related electrical and infrastructure to support six transceiving stations and 60 people is a significant undertaking under simulated disaster conditions. There is a lot of organisation and hard work to ensure that the whole system is comprehensive and very reliable. The club team Andy VK4KY, Peter VK4EA, Glen VK4FZ, Peter VK4TAA and many more who worked very hard to collate, test and ship the equipment, food and facilities to the site at Murrumbong.

This year the RRC used large 12 V 200 Ah SLAs as the primary source of power with regulated power supplies being

used to top up and maintain full charge. The power supplies were fed by long power cables to a standard or inverter generator power supply. Most of the lighting was high efficiency LED strings and low voltage fluorescent lamps. The "UPS" approach meant that generators could be refuelled safely and there was no need to run them continuously as well as preventing the unexpected blackout if a generator failed.

There were issues with interference from the inverter generator, 12/240 inverters and 12 V lamps. Special filters were built to reduce noise from inverter generators and appropriate usage and location resolved other sources of electrical hash. This year a special notch filter was built on the 40 m rig to minimise the 3rd harmonic with the 15 m band.

The number of contacts was well up on last year and included a reasonable number of CW contacts in the totals.

Band	Contacts	Antenna	Power	Equipment.
160 m	20	mono dipole	100 W	K3
80 m	256	mono dipole	300 W	Icom IC-756
40 m	516	mono dipole	300 W	Icom IC-718
20 m	333	dipole and Yagi	300 W	Icom IC-718
15 m	63	mono dipole	300 W	Icom IC-718
10 m	37	Stationmaster	300 W	Icom IC-718

Peter VK4EA had some APRS and packet equipment on site as well as a Yaseu FT-817 where some non contest activities were undertaken with 4FY.

It was a relaxed atmosphere where learning and amateur assessments were conducted. Our youngest member Nicholas O'Sullivan was undergoing training and examination during the weekend. He passed all components and now he has a callsign of his own. He appeared in a segment of Extra.

Direct Hire supplied portable toilets on site and access to showers .... very important for XYLs and their families. Peter VK4EA was the camp oven champion and we all sat down to a magnificent roast lamb or pork with a selection of roasted and steamed vegetables on the Saturday night.

Everyone enjoyed a marvellous experience camping, learning more about our hobby and playing radio. The Monday after the RRC had a debriefing session and notes were taken to deal with shortcomings and improve the experience for the next weekend away. The chairman and his committee extend their congratulations and thanks to all who contributed to the smooth running of the weekend.

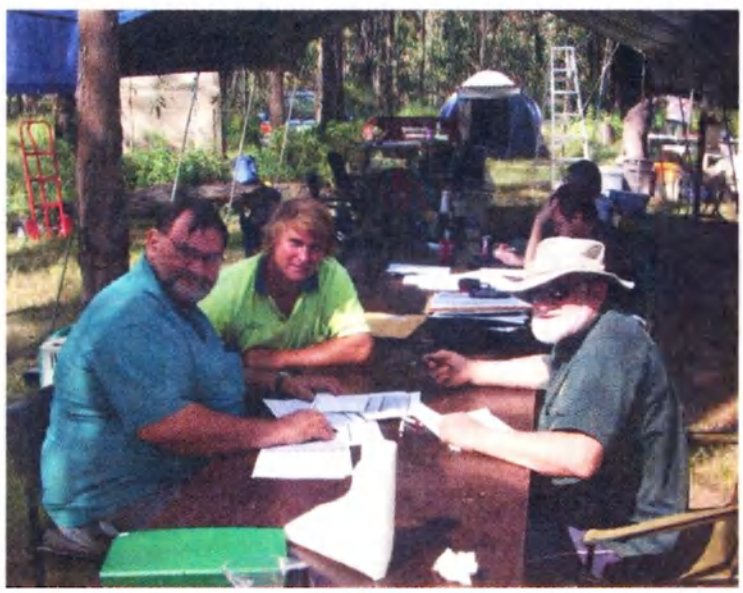
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Nicholas setting up.



The tents set up as radio rooms



The assessment team at work. Ray VK4CF, Chris VK4ANI and Scott Meredith, who has now completed his Foundation assessment.



Peter VK4EA cooking dinner

ADELAIDE HILLS AMATEUR RADIO SOCIETY

Christine Tayior VK5CTY

Ten AHARS members competed in the 2009 JMMNFD in kinder weather but more unkind propagation than last year

March was a busy month for AHARS. Over the weekend of 7th/8th ten members participated in the John Moyle Memorial Field Day at the venue we have used for a number of years, even though it is now under new ownership.

Robert VK5ZHW and Tina VK5TMC were very glad the weather, this year, allowed us to run VK5BAR for AHARS at Womberoo, near Swan Reach. If you remember, last year VK5 was in the middle of a solid fortnight of maximum temperatures over 40°C on the weekend of the JMMFD.

This year the weather was almost perfect. Unfortunately propagation was not as good as it has sometimes been, but neither was it impossible.

We had stations on 20, 40 and 80 metres and tried for contacts on 15 and 10 metres, and, on the Sunday morning we put out calls on 160 metres, on which we have managed a few contacts in other years, without success, even though we could hear the Sunday morning broadcast on that band. Please listen out next year, any members who use 160 on Sunday mornings.

For Richard VK5ZNC, the new Treasurer of AHARS it was his first ever contest and almost his first ever experience of HF. For his XYL, Sue VK5AYL this was the first time in many years she had used HF although she had, at one stage, used it regularly.

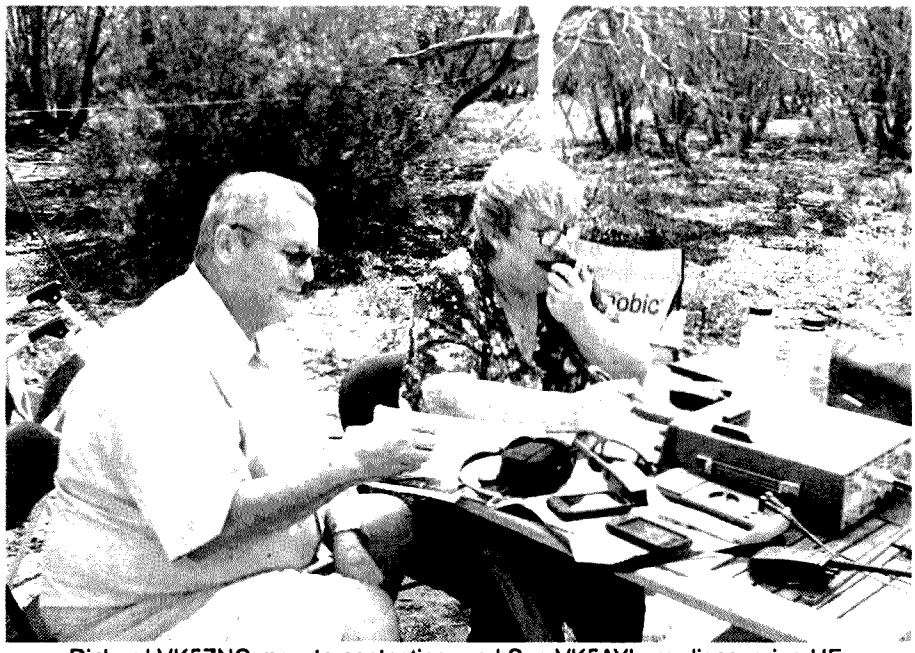
Several new antennas were tried out this year with success. Several were tested against each other and at one location two different rigs were tested with the same aerial. The spirit of the Field Day was followed.

It is possible that there were fewer stations on the air this year because many amateurs had used their field day skills seriously during the terrible VK3 bushfires. They did not need to practise!

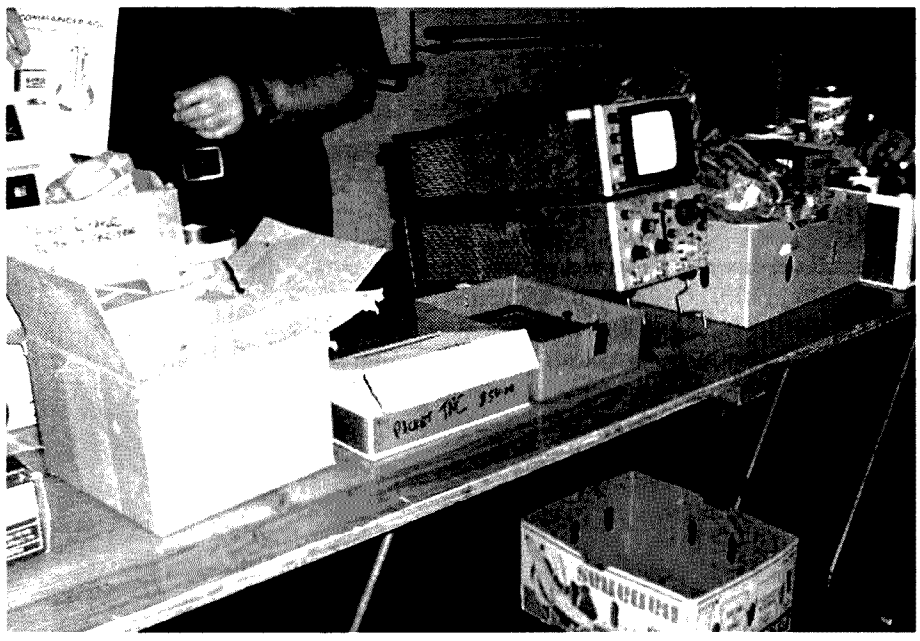
The March meeting was the usual Members' Buy and Sell with lots of tables displaying lots of wares.

In the spirit of a Buy and Sell, one man's junk became another man's treasure.

The future meetings will be held on the third Thursday of each month at the Blackwood Recreation Hall starting at 7.30. Please contact Leigh VK5KLT, David VK5KT or John VK5EMI (when he returns from his holiday).



Richard VK5ZNC, new to contesting, and Sue VK5AYL, re-discovering HF.



Treasure or trash at the Buy and Sell ?

AHARS was saddened to hear that Bryan VK5SV has become an SK. Bryan had been a stalwart of the club for many years, holding the position of Treasurer for 17 of them.

A number of members attended his funeral service along with many people from other parts of Bryan's life. He was a highly respected man in many fields, not least as 'the Eagle on the Hill' as he watched the activities of the Seacliff Sailing Club from his house.

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VK2

Tim Mills VK2ZTM
c/- arnews@tpg.com.au

Next month will be the 34th annual Field Day of the **Oxley Region ARC** - being held in Port Macquarie on the Sunday [7th] of the June long weekend. This year the Club will be holding a one day event advised Jim VK2VIV, Secretary of ORARC. The event will be held at the usual location, the Sea Scout Hall in Buller Street. It will run from 8 am to 4 pm with fox hunts, a BBQ lunch, Trash and Treasure, Trade and general displays. You can contact Jim on 02 6581 2481 or email him at vk2bor@orarc.org There are more details on the web site www.orarc.org

The ABC TV Collectors program showed the Kurrajong Radio Museum segment on April 17th, a week later than first advised due to a programming change. The **St. George ARS** was the latest group to visit the Museum, which they did on the 26th April. You can check out the Museum by a Google search on **"Kurrajong Radio Museum"**. Telephone 02 4573 0601 or email vk2zio@yahoo.com.au Open at weekends – 10 am to 5 pm - or by arrangement.

The **Waverley ARS** have moved their HF SSB net to Sunday morning, starting at 7.30 am. Known as the 90NET, it operates on or near 7.090 MHz. It and the Monday evening net on the Paddington repeater offer good opportunities to make contacts for their 90th anniversary award.

They are also planning to hold a dinner for the anniversary and they invite past club members to indicate attendance by email to dinner@e-v-electronics.com or telephone 02 9337 2909.

Hornsby and District ARC operated VK2IMD in the International Marconi Day on April 25th. They are planning exams this month, check out www.hadarc.org.au or telephone Tony VK2BTL on 02 9487 3383.

The **Illawarra ARS** have their 2 metre D-STAR repeater VK2RDS fully operational on 146.7625 MHz with the normal -600 kHz offset, reports President Tony VK2TS. 70 cm and 23 cm frequencies will be confirmed soon. They have an extensive book and video library. The Club maintains 12 repeaters, three APRS digipeaters and several packet gateways. Their web site is www.iars.org.au They meet on the second Tuesday evening.

By the time these notes appear the **NSW Division** will have had their AGM and the new Council will be settling down to a busy and productive year. Also the 'shed' should have received its long awaited approval. At the end of this month – Sunday 31st May – is the next scheduled T&T at the VK2WI site. The morning T&T activity is followed in the afternoon by the **Homebrew and Experimenters Group** – with Show and Tell and lecturettes. At their March gathering the Group had the advantage of the shelter provided by the shed's veranda. This is along the east -front-side of the shed – three metres wide by 24 metres in length. Many of the Group helped in rolling the water tank onto its base at the end of the shed. They say many hands make light work.

By now the latest beacon in the VK2RSY stable should be on line. This one is on 432.420 MHz, CW mode with about 20 watts to the existing two bay crossed dipoles, currently at roof height. The commissioning of this unit restores the VHF and UHF beacon line up at the VK2WI Dural site in grid square QF56mh. See last month's VK2 notes for contact and reporting details.

73 – Tim VK2ZTM.

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VK3

Peter Cossins VK3BFG
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

AGM Tuesday 19 May

As previously advised, the Annual General Meeting of Amateur Radio Victoria (The Wireless Institute of Australia, Victorian Division) will be held this month.

In line with past practice, the Annual Report was issued on the Members Section of the website, hard copies made available on request or mailed to those members who had not registered and provided their current email address.

The meeting will consider the annual reports, the profit and loss account to 31 December 2008 and the balance sheet at that date. In other business, the Council for 2009-2012 will be announced as all seven current Councillors are being returned.

Come along to the AGM, a great social occasion with the business part of the meeting being fairly brief and followed by a member forum. It will be on Tuesday 19 May at 8 pm in the St Michaels Community Centre Hall, corner Victory Boulevard & High Street Ashburton (enter from Victory Blvd. Ample parking).

The Secretary/Treasurer's Report by Ross Pittard VK3CE comments on the impact of the global financial crisis and quick action taken by the Council to keep the organisation's investments secure, while maintaining the returns on them, which contributes to more than 60% of the income each year.

With a range of initiatives in place there appears to be no reason in the foreseeable future to adjust the membership subscriptions.

Amateur Radio Victoria spent $15,000 on its repeaters network in 2008. It is anticipated during 2009 that the D-STAR 2 metre repeater will be commissioned on Mt Macedon, the digital upgrade of VK3RTV has started, as well as upgrades and maintenance to the Victoria wide network.

Next year will be an important year for Amateur Radio celebrating our centenary and Council is working on

News from VK3 continued

a number of initiatives to celebrate this important milestone, one of which will be the return of the Centre Victoria RadioFest at Kyneton.

The President's Report by Jim Linton VK3PC also comments briefly on the state of the economy and other factors such as higher imported equipment prices plus increased costs for those entering amateur radio.

Acknowledgement is given to the work of our Education Team headed up by Barry Robinson VK3PV, instructor Kevin Luxford VK3DAF and the pool of assessors that make a sterling contribution.

Our Event Coordinator Terry Murphy VK3UP with the assistance of others has consolidated the organisation's participation in both the ILLW and JOTA. The revival of the Keith Roget Memorial National Parks Award occurred during the year and thank you to Chris Chapman VK3QB for taking on the role of managing it.

Throughout the year there are many radio amateurs who help in the running of Amateur Radio Victoria, all are thanked, particularly the office volunteers led by John Brown, plus the numerous repeater officers who quietly work in the back ground to maintain our network.

Finally, but not least, is acknowledgement of our Internet Project Development Officer, Gary Furr VK3FX who works quietly behind the scenes achieving consistent improvements in the organisation's online presence and e-membership services.

Membership inquiries

To join and support the state-wide organisation Amateur Radio Victoria costs $30 for Full or Associate membership ($25 Concession), for two years. New members are most welcome and an application form can be found on our website or posted out on request.

Foundation classes

Training and assessment sessions for the Foundation Licence will be held on the weekend of 23-24 May at Box Hill North. If you know someone who could be interested in becoming a radio amateur, or need more information then contact Barry Robinson VK3PV on 0428 516 001or foundation@amateurradio.com.au **ar**

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

Our formal meetings for the year started at the end of January. From then until the end of March much has been accomplished.

Unfortunately the month of February saw the terrible fires that ravaged parts of Victoria. Some of our members volunteered to work as radio operators at Kinglake. Neil VK3XNH was deployed for two five day periods at an Incident Control Centre. Upon his return Neil gave the members a detailed account of his experience.

Also during February we had a visit to the "Royal Australian Corps of Signals Museum" located at Simpson Barracks in McLeod, Melbourne. This visit had a twofold purpose. We were anxious to see the recently refurbished and reopened museum, but just as important as this, we had a number of military radios to donate to the museum. Major Jim Gordon VK3ZKK the manager of the museum thanked us for the donations.

Our syllabus for the first quarter has had some interesting topics; among these was Bill VK3YHT bringing along his extensive range of test equipment. This included both homebrew and commercial test gear. Bill, who is a retired communications technician, gave a description of each item which included antenna analyzers, a Bird through-line watt meter, and a commercial spectrum analyzer.

Another talk that was of interest to all who own programmable radios was given by John VK3LJS. He described the uses of and the pitfalls in using software programs to program multimode/multiband transceivers.

We had one guest speaker during the quarter. This was Bob Tait VK3XP, a regular speaker. In the past Bob has spoken on auto electronics and associated topics, however this time he had a surprise for us.

He had organized a "bridge night" for us. Contrary to what you might think, this did not involve playing cards, but he outlined the many pieces of test equipment that were based on the Wheatstone bridge principle. These included SWR bridges, LC bridges, wattmeters and many other items that used a bridge. We are indebted to Bob not only for interesting and informative talks, but also as, after entertaining us for the evening, he then faces a two and a half hour drive home.

Our Wednesday group of retirees are still hard at work on the many jobs around our club rooms that never seem to diminish in number. Our on-going collection and selling of scrap metal requires considerable effort, but over the years has been a great source of revenue for the club.

One job that has taken many man hours to complete was the setting up of a valve bank. Mainly due to the sterling effort put in by Keith VK3XKS we now have a bank of over 7000 valves consisting of over 600 different types. These valves, many of which have been salvaged from old radios, have all been tested and sorted into their respective categories. This bank will not only be of use to us when restoring old radios, but to any non members who are looking for replacement valves either for old broadcast radios or older boat anchor amateur equipment. Anyone looking for old valves may contact the club at PO Box 501 Belmont 3216. Alternatively we can be contacted via email at vaycgres@netlink.com.au

Visitors to Geelong are invited to attend our weekly meetings which are held at 8 pm local time at 237A High St Belmont, or call in for coffee and a chat on Wednesday mornings. Visitors are also reminded to call in and see our museum which is located in the Old Geelong Gaol situated in Myers St. Geelong. **ar**

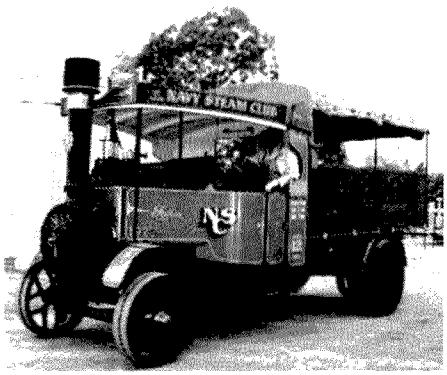
Eastern and Mountain District Radio Club

Joe Chakravartti VK3FJBC
vk3er@emdrc.com.au
http://www.emdrc.com.au

It has been a while since I updated folks on what the Eastern and Mountain District Radio Club has been up to. Family commitments and other matters have that on the bottom of the list.

That does not mean that the members of the EMDRC have been sitting around and doing nothing. It is quite the reverse. The club has been so busy that even the dust has not had a chance to settle on the radios in the clubrooms.

And on the subject of clubrooms, the EMDRC has now moved to its newly refurbished complex downstairs. I take the liberty of calling it a complex because it is more than just a room and a shack. It is a radio amateur's dream come true. It is more like the pit garage equivalent of a Formula 1 team.....okay, I am exaggerating a bit but you get the drift. We have a huge shack and library, a meeting room, showers, toilets, a kitchen, a construction room for club projects and storeroom. About the same time, the Whitehorse Centre returned the club to its original meeting venue, the newly refurbished Willis Room.



We have our eye on this Foden as a vehicle for our next DXpedition

In February, we had the D-STAR meeting and barbeque which was a well attended event. Peter VK3TQ and Richard VK3JFK gave us a full update of where D-STAR now stood compared to when it first started.

This was followed by a trip to the Scoresby Steam Fest, where we set up our display. The event was a huge success and we really stood out among the weird and wonderful steam machines from the years gone by. Club members representing the EMDRC were at hand for all three days of the event to talk to roving visitors and many curious onlookers in between playing with the club's HF and 2/70 rigs. The club gained a new member from the exercise. Now the organizers of the event want a repeat presence next year!

This was interspersed by a group of members activating VK3ER at Mt Cowley for the John Moyle Memorial Field Day and a presentation on VKCL Logging software by Mike VK3AVV (http://web.aanet.com.au/~mnds/index.htm) and a presentation by Andrew VK3KIS on contesting in the US. Andrew and YL Barbara VK3AGU used to live in the US and still have links to the Bergen Amateur Radio Club. Meanwhile the ALARA ladies were busy with their own events with a lunch and a camping trip.



David VK3DLR showing the flag at the Scoresby Steam Fest

Just as members began to think that all the excitement was over, the EMDRC changed channels and went into WES mode. The annual White Elephant Sale was held at the usual location in late March and the 400 odd well-fed people that walked in through the door lapped up bargains at the same speed that they consumed the snags and hot dogs, not forgetting the thousands of cups of tea that flowed out of the kitchen.

At the time of writing, members are looking forward to a presentation on Telstra's site acquisitions by Steven from Telstra Wireless Operations, a presentation on ATV by Peter VK3BFG, a boat anchor night in May, followed by the AGM in June. It is all happening at the EMDRC!

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"Hey, Old Timer..."



If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194
or call Derek VK3XY on **03 9563 6909** or Bill VK3BR on **03 9584 9512**,
or email to raotc@raotc.org.au
for an application form.

ALARA

Christine Taylor VK5CTY

The AGM

Hope you were there and hope propagation was good that night. The makeup of the new committee will appear in next month's magazine.

Luncheons

A lunch was held in VK4 at the Woodman's Hotel in Mudgeeraba with seven ALARA members present. The next luncheon in VK4 will be held in the clubrooms of the Gold Coast ARC in a couple of month's time.

Pam VK5PTO is settled in her new home with antennas up and she can be heard very well on Monday night nets.

The VK3 April lunch was at the Wheeler's Hill Hotel. A good crowd attended and there was much good chatter.

The girls were pleased to welcome Mavis VK3KS, one of the earliest members of ALARA. Gwen (another early member) was also present.

The VK3 state representative Jean VK3VIP brought her mother, visiting from ZL. Their next luncheon is in a few month's time. Watch for the emails.

Almost an ALARA Field Day

The John Moyle Field Day held at Swan Reach by AHARS this year was very nearly an ALARA activity.

There were four active ALARA members there, all of whom made contacts. For some it was a regular event but for Sue VK5AYL it was very special.

Sue has had her licence for many years and was very active, particularly on VHF and Amateur TV, both in VK5 and VK2. Later she was active on HF from a country VK5 but for the last 15 or so years she has not operated at all.

She had a great time, made a lot of contacts and renewed her interest in HF and operating in general.

Her OM Richard VK5ZNC had and used his licence when he was at university but has not picked up a microphone since then. He also is now a keen amateur operator! Field Days are a great way to introduce or re-introduce amateurs to the joys of making contacts.

For Lesley VK5HLS, the Field Day was a bonus, too. She is chasing her DXCC with only 5 or 10 countries to go. When one of the operators on 40 called her to say he had a station in P29 who would be happy to give her a legal contact, she was delighted. She could not get over to that location quick enough, with her own log book in hand. Those last few countries can be very elusive.

A well known YL operator will be less well known for a while

Shirley, previously VK5JSH, is now VK5YL.

There have only been two previous holders of that callsign. Betty Geisel was assigned VK5YL as an 18-year old in about 1937. She built her own transmitter and receiver and erected her own aerials, and was employed later as an electronic technician. When the War came, like all the amateurs, Betty had to close down her station and as marriage and family came along after that she did not renew her licence.

When Denise came to live in VK5 in about 1959, after gaining her licence in VK1 (where she was given VK1YL), and a couple of years in the US, she was allotted VK5YL although she did not actually ask for it. Denise became an SK only a few years ago after using her callsign both on CW and on phone throughout that time. Denise was an active member of ALARA from shortly after its inception.

All Shirley's ALARA friends and all the people she had contacted on air and through Echolink wish her much joy with her new callsign.

If you have changed from a three letter call to a two letter one, please let us know so we can tell all your friends.

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Mavis VK3KS and Gwen VK3DYL, another early ALARA YL



ALARA members of AHARS at the Field Day. Tina VK5TMC, Sue VK5AYL, Christine VK5CTY and Lesley VK5HLS.



Jean VK3VIP with her mother visiting from ZL

VK6

Keith Bainbridge VK6XH

This month I have been inundated with material!! Maybe the message is getting through and people are realising I am only human and not a journalist! I am delighted that some clubs have been very active and took the time to report their activities in words *and* photos.

Peel Amateur Radio Group (PARG)

My son and I (VK6FJFB) had the pleasure of visiting Lyle Pattison VK6ALU and Dot in their lovely home in the RAAFA Estate Meadow Springs village.

Lyle describes himself as a simple minded user (SMU) with a big smile, but there is nothing simple about his knowledge. Lyle started amateur radio in NSW with the call sign VK2ALU. Three and a half years ago Lyle and Dot moved to Western Australia.

Lyle has had a hand in the pioneering of amateur radio. On 28 August 1996 Lyle and friends had a successful moon bounce on 10 GHz, creating a new Australian and World record, 17,004 km, on 10.368 GHz. Lyle's dream of this achievement started in 1959.

Lyle was a part of the Illawarra Amateur Radio Club, when he was approached by the Radio Astronomy System of CSIRO to do a moon bounce attempt together. In 1973/4 Lyle made his first EME contact on the 23 cm band.

Lyle did a working demonstration for the PARG at a monthly meeting. The power output on transmit is nominally 1 watt from the transmitter. The radiated power from the antenna is 1 kW. The signal is conveyed by the wave guide, which is connected to the antenna. The antenna is a feedhorn which is part of the parabolic reflector type antenna. The feedhorn is at the focal point. There are two modes, CW or SSB. Although made for battery operation, AC power can be used.

Lyle made this equipment from the ground up from various modules available and his own designs. The 2 m transceiver used for the IF is the only part not built by Lyle.

Thanks Lyle for an excellent presentation. 73 Michelle.

Thank you Michelle for the report

Hills Amateur Radio Group (HARG) swap meet

The HARG swap meet held on March 14th was an outstanding success. Over 120 enthusiasts passed through the door, forcing the BBQ crew to do a mad dash to the stores for more sausages.

A great variety of items was presented for sale on the 15 tables, ranging from small lengths of co-ax to amateur transceivers and high powered RF amplifiers. A local dealer, Hamshack, also had a display table offering a range of antennas, transceivers and test equipment. Many buyers left at the end of the day with great bargains under their arms. The event was also an opportunity for friends to catch up. The chatter continued after most of the goodies had been sold. In particular it was pleasing to see a few of the club's long standing members attending and swapping stories.

First prize in the raffle was a Yacsu ATAS 120A Active Tuning Antenna System kindly donated by Vertex Standard. This was surprisingly passed over by the winner in favour of the Garmin Etrex GPS! The 2nd prize winner, Doug VK6FWDH, was elated in winning the ATAS 120A to go with

Continued page 38



PARG member Lyle Pattison VK6ALU demonstrating his 10 GHz portable transceiver.



High activity at the HARG swap meet.

News from



Christopher Comollattie VK4VKR Email: vk4vkr@wia.org.au qtc@wia.org.au

May Day Weekend

Time flies when you are having fun or is it when you are busy. Well that's Easter out of the way and then the dawn service for ANZAC Day (Lest We Forget), now May Day weekend is here.

I will be doing the annual trip to Clairview along with quite a few other amateur radio operators from far and wide for the annual greeting. I will use the monster auction to clear some of the "no longer required" from my shack and hope not to return with as much this year, we shall see. Mark your calendar, pack up the car and family to enjoy a great weekend.

Clairview is aabout 123 km south of Mackay city. Wet a line at Clairview Beach while sitting back and enjoying the view... you might even see a dugong. Clairview is a popular fishing and crabbing village with camping permitted in designated areas and a caravan park with full facilities. During the winter months, local groups sell arts and crafts and offer morning teas and soups.

Clairview Beach Holiday Park - Bookings on 07-49560190.

Mackay Amateur Radio Association

The Mackay Amateur Radio Association is now having their monthly meetings on the second Tuesday of the month, at 7.30 pm at the SES Building, at the Mackay Regional Council Depot, at Ness Street, West Mackay.

RADAR

The Rockhampton and Districts Amateur Radio club proudly displayed the hobby of amateur radio at the Heritage Village local Arts and Craft Market Day: with Foundation manuals being sold and, as a new recruit attended the following meeting, the day went very well.

CW Training

John Saunders VK4BZ and George VK4XY have been promoting CW since last year. George VK4XY started a net on 10 m and then due to conflicting dates it went into hibernation. John picked it up later on in the year and moved it to 80 m for wider appeal and better signals (but a lot more QRM/QRN!).

The net runs on Thursday nights from 1030 Z onwards, on 3.665 MHz. John VK4BZ has it that far up in the band to avoid QRM and blocking the CW portion of the band with more SSB signals on the call-back. Practice Morse is sent at 9, 11 and 13 wpm, followed by a call-back and then a round-robin style CW net.

With this great offering John VK4BZ is helping people develop their CW skills.

John VK4BZ was getting to the point of discontinuing but with added interest from VK3 and VK1, it looks like he will continue. Redcliffe club has so many varied and diverse interests, but CW has been making a come-back, particularly since the members have seen some of the contest results we have been getting. In the 160 m CW contest, we blew people away when we worked KL7! It did not count for points in the contest but won a lot of kudos for the CW guys.

So if this is for you or even if you are not sure, then give it a try and find out.

Thanks John VK4BZ and George VK4XY.

WICEN NET

You probably know David VK4IQ and Malcolm VK4ZMM are the Brisbane base operators for the regular Sunday morning WICEN HF Net. Malcolm VK4ZMM has been away, from the 9th of March for approximately two months, so it will be up to David to control the net whilst Malcolm is away. Feel free to join the Sunday morning net, at 0830 EST

BARCFest 2009

Mount Gravatt Showgrounds is where you should be on the 9th May, with commercial dealers, displays, used gear, food/drinks and so much. Doors open at 9:30 in the morning. For more information see the website http://wwwqsl.net/vk4ba or contact Les, the BarcFest coordinator 0411729642 email parkerlf@optusnet.com.au

Gladstone Amateur Radio Club

The Gladstone Amateur Radio Club promotes and supports the hobby of amateur radio in Gladstone and districts in Central Queensland, Australia. The repeaters are located at Mt Maurice in Gladstone on 146.625 MHz and IRLP node 6246 on 438.050 MHz, and also at Kroombit Tops on 146.900 MHz and 53.725 MHz with APRS.

Club meetings are held at 7:30 pm on the first Monday of every month (except January) at the SES Headquarters, Lamington Drive, Gladstone.

If you are passing through the region I have been advised by Rob VK4TW that there is an experimental 70 cm repeater operating halfway up the Narrows. It is operating but still licence pending, with a frequency of 438.675 negative offset.

TARC Diary

Townsville Amateur Radio Club has a busy month for May:

Management Meeting: Tue May 5, 7:30 pm at SES HQ Green Street West End

Project Night: Tue May 12 from 7:30 pm at SES HQ Green Street West End

TCAC King of the Hill Climb: Sun May 17 Heat Two Communications Support Mt Stuart

Social Evening: Tue May 19 from 7:30 pm at SES HQ Green Street West End

TERAHA Horse Endurance Ride Communications Support: Sat and Sun May 23, 24 at Bluewater

Ann Renton Memorial Ladies net 26th May 26 from 7:30 pm on Townsville VHF Repeater

People in Profile

Sorry, due to a busy month I was unable to catch up with my next victim. Oops, did I say that out aloud. Stay tuned next month for another People in Profile. And for no pictures as my disk drive has failed me for my photo collection.

Until next time 73

VK4VKR (IRLP 6973)

On the side and listening.

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News From VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au Regional Web Site: reast.asn.au

Meet the Voice & Sewing Circle BBQ

The MTV/SC BBQ was held this year on 22 March at the picturesque Midland's town of Ross. The rain cleared, the weather became balmy and the hospitality was fantastic. Highlights included a presentation of the Sewing Machine Award to the most loquacious amateur of 2008, Vince VK7VH, and the presentation of two special awards to recognise the contribution to the Tasmanian amateur community in the area of repeaters to Joe Gelston VK7JG and Brian Morgan VK7RR.

The group heard a recording from Joy Batchler, 93, (formerly VK7YL) – VK7's first woman amateur back in 1935. Joy recorded her humorous recollections about how the Sewing Circle net got its name.

The Bargain Boot Bonanza was a roaring success with many bargains bought and sold and I believe an XYL was even traded...HIHI. Thanks to all involved especially Don VK7AY and Ray VK7VKV and all attendees, it was a great day and I look forward to the next one.

North West News

North West Tasmanian Amateur TeleVision Group

The big news in the North West is the formation of a new amateur radio club – NWATVG.

The committee is: President - Tony Bedelph VK7AX, Vice President - Jim Hiley VK7JH, Secretary - Steve Bush VK7EQ, Treasurer - Ivan Ling VK7XL and Committee Member - Neil Southwell VK7ZNX. The main objectives are to promote the hobby of amateur radio and provide training and assessments particularly for the youth of the North West community. The club has nominated an assessor and three learning facilitators. More information is at: http://www2.vk7ax.id.au/atvgroup/

North West Tasmanian Amateur Radio Interest Group

Recent elections for NWTARIG were declared void. New elections were held on 28 March with the following office holders elected: President - David Spicer VK7EX, Vice-President - Dick Whatley VK7FORF, Secretary - David Cleland VK7DC, Treasurer - Vernon French VK7VF and Committee Person: Eric Edwards VK7FEJE.

Northern Tasmanian Amateur Radio Club

Further to the squid pole antennas report last month - NTARC has exhausted the market in VK7 for the 9 metre poles, Phil VK7JJ was seen expounding the virtues of the design and many were seen at the Meet the Voice BBQ at Ross.

Apparently there are still orders flowing through for when the manufacturer restarts production! So have a chat with Ann VK7FYBG or Jason VK7ZJA.

At the time of writing there was a field day at Hollybank taking place where the squid pole antennas were being constructed and field tested. Lots of great amateur radio activity in the North of VK7.

REAST — Radio and Electronics Association of Southern Tasmania

Congratulation go to Gary VK7VMS, Tony VK7VAC (formerly VK7FACC), Ron VK7VUU (formerly VK7FEAA), Gary VK7HAO and Corey VK7FCJC who all have their new callsigns.

The REAST AGM was held on 15 March with the following office holders elected for 2009:

President - Gavin O'Shea VK7HGO, Vice–President - Dave Marsland VK7DM, Secretary. - John Slevin VK7HJS, Treasurer - Richard Rogers VK7RO, Committee Member - Bob Warren VK7ZL and Warren Nicholas VK7FEET.

At the AGM there was a special presentation in memory of Matt Whayman (VK7MAT SK) who was tragically killed 10 years ago. Matt's mum, Carol donated a new – still in original package – 10-15 m beam that Matt never got the chance to put up.

It was presented to Thomas Karpiniec VK7NML as a gift in memory of Matt Whayman.

REAST's April presentation was given by our new President Gavin VK7HGO on what is involved with the running of the communications used in Targa Tasmania

Continued next page



At right: A beaming Thomas VK7NML (right) receiving the beam!



Meet the Voice & Sewing Circle BBQ at Ross

Silent Key

David Rankin VK3QV/9V1RH SK

David Rankin VK3QV/9V1RH passed away at home in Singapore on the morning of 19th March 2009. He was aged 74.

David was well known in the amateur radio community all around the world. On and off the air he will be remembered for his engaging conversations, his genuine, warm and friendly manner, and his deep interest in, and enthusiasm for amateur radio.

He was involved with the Victorian Division of the Wireless Institute of Australia (WIA), the Federal Executive, and was Federal Vice President for a number of years. David was an active member of the Singapore Amateur Radio Society (SARTS).

He was a great supporter of SEANET and his long term interest became International Amateur Radio Union (IARU) Region 3. David was Secretary of IARU Region 3 from 1973 to 1982, Chairman from 1982 to 1994 and Director from 1994 to 1997.

David's interest in amateur radio was kindled at an early age by Rod Biddle, an amateur who lived next door, and who ultimately went on to become Chief Engineer for Channel 9. David was first licensed as VK3ZAQ in 1954. In 1959, he passed the Morse test and took the call VK3QV.

David joined the Federal Executive of the WIA as their VHF expert in 1959. He also held the position of Federal Activities Officer. David was actively involved in the VK3 VHF Group and the construction of the 144 MHz transmitter when VK3WI was established in the Victorian Division rooms on Victoria Parade, East Melbourne.

David attended the 1968 Federal Convention at which the formation of the IARU Region 3 organization was initiated. David was WIA Federal Vice President from 1969 to 1973, and remained on the Federal Executive until he moved to Singapore.

David was a Chartered Engineer, a member of the Institution of Engineers Australia (IE Aust) and a Fellow of the Institution of Radio and Electronic Engineers (IREE). He served in the National Service with 14th Battalion RAEME (Royal Australian Electrical & Mechanical Engineers) in 1954.

David commenced his professional career as an Electronics Engineer in 1957 with Austronic Engineering Laboratories and worked in nucleonic instrumentation and allied fields.

In 1958, David joined International Computers and Tabulators Pty Ltd, later to become ICL Ltd, and worked in customer service on punch card equipment and small computers. In 1961, David joined Pye Pty Ltd and worked there for eight years, mostly as Chief Engineer – Crystal Division.

David co-founded Hy-Q Electronics, a leading Australian crystal manufacturer, in Frankston, Victoria, in June 1969. He was the Technical Director of Hy-Q and went to Singapore when, as Hy-Q International, the company established a facility there in 1972. In 1976, David joined Rank O'Connor's as Technical Manager and was promoted to, and retired as, General Manager. David subsequently became the Managing Director for Fluke in Singapore, finally retiring from the profession in 1996.

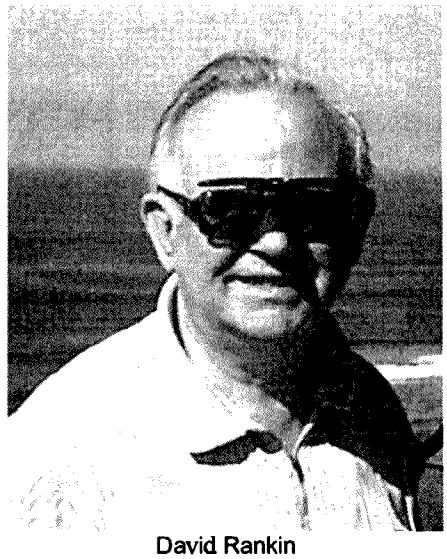
David enjoyed immensely amateur radio and the many friends that he made through amateur radio. He gave an enormous amount of his time and himself to amateur radio over many years, particularly through his gentle and persistent encouragement to me, and through his service to the amateur radio community, the WIA, SARTS and the IARU Region 3.

He leaves Adeline and children, Sheila and Edward.

David, we all shall miss you.

Gerard Rankin VK5ZQV

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David Rankin

VK7 from previous page

– Australia's premier tarmac rally held 28 April to 3 May 2009.

The REAST ATV Experimenter's nights (Wednesdays 7:30 pm) are going gang-busters with more and more people coming along. We are now going out on both 70 cm Analogue (444.25 MHz) and 23 cm Digital (DVB-S on 1283 MHz) each night. http://reast.asn.au/events.php#ATVnights

RAOTC Broadcasts in the NW

Thanks to Winston VK7EM, the Radio Amateurs Old Timers Club (RAOTC) monthly news broadcast can be heard on VK7RMD, (Mount Duncan) 2 metre repeater on the first Monday of each month (except January) at 8.30 pm local time.

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VK6 from page 35

his new Yaesu transceiver.

The group also had the shack open and participated in the John Moyle Field Day. This gave prospective amateurs a close up view of a working HF station. Hopefully Ham College in Perth will see a few extra enrolments in their next Foundation course.

HARG would like to thank all attendees and will hold a swap meet next year, with more tables and an improved layout.

Thanks to Mick VK6YXL and all at HARG for a most enjoyable afternoon.

NCRG CQ WPX contest

The NCRG put in its best effort ever in the CQ WPX contest in the Multi Single class and came very close to breaking the Australian record. Possibly another 10-20 contacts would have seen this happen. Maybe next year!

Preliminary results seem to show 5,063,982 points from 1733 contacts. 40 metres was the money band using the new three element beam. Improvements in the 80 metre antennas next year will push the club into the record books, I am sure. Well done to all 10 operators.

That is it for this month. Maybe we will have a positive change to the sunspot cycle by the time I write the next edition of VK6 Notes.

Vy 73 from Perth.

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SERG and the Mount Gambier Legends of the Lakes Hill Climb

Charles Prime VK5XCP

South East Radio Group (SERG) has been helping with communications for the Legends of the Lakes Hill Climb event for three years. The event involves hill climb time trial racing up out of the Valley Lake crater in Mount Gambier.

Voice communication, provided by club members on 146.550 MHz from ten observation points, was critical to allow fast dispatch of vehicles, and to ensure safety.

At the event on November 8-9 SERG went beyond the voice communications provided in the past and also supplied video footage via ATV. Officials borrowed a CH37 UHF TV transmitter and with the cooperation of SERG and ACMA, a seven day transmitting licence was obtained.

The race was broadcast locally with SERG providing the TV links to the main transmitter. The main link was on 1250 MHz with a camera link on 70 cm.

There were ten manned observation points along the course plus an operator in the Race Control Centre, with two operators needed to do the video switching and two 'cameramen'.

Setup was on the Friday with SERG's trailer brought to site and all ATV transmitter antennas assembled and the links tested.

The weather was terrible and with rain and recorded wind gusts over 90 km/hr, made setting up a challenge. Colin VK5DK, Charles VK5XCP and Andrew VK5KET were able to make themselves available to set up as much of the equipment as possible.

J-Pole antennas were used at some communications points so that mobile radios could be used with sufficient power to clear any obstacles.

The communications points had various roles. Bus entry points at top and bottom required our operators to pass messages and observations to race control about status of buses and barriers. Some points passed messages to flag marshals as required.

One observation point, communications point 4 (CP4), was to report when a car was clear so that the next car could start on the track.

The start line operator would announce the car 'on the line' and give the signal to release it. After a few cars a rhythm was developed. The call from CP4 was important and it turned out there was a 30-40 second window to put non-essential messages to race control without interfering with the start line. Sometimes it took two or three cars to get the messages through.

Text continued on page 45



Mike, one of the many SERG helpers, manning the cameras at the chicane.



Charles VK5XCP and Linley VK5FRED sorting it all out after an incident at the action packed chicane.



Andrew VK5FCLS and Steve VK5GL at the SERG trailer.

90th Anniversary of Radio Communications between the UK and Australia

Edwin Lowe VK2VEL

At 1100 hrs (AEST) on Monday 22nd September 2008, Sydney radio amateurs and members of the local community gathered at the Fisk Memorial outside the former house of Sir Ernest Fisk, at Wahroonga in Sydney, to commemorate the 90th anniversary of the first directed wireless messages from the UK to Australia.

On 22 September 1918, wireless messages from Prime Minister Billy Hughes and Minister of the Navy Joseph Cook, then in London, were transmitted from the 200 kW Marconi station MUU in Carnarvon, Wales on 14300 m (21 kHz) and received at the experimental receiving station at Fisk's Sydney home, 'Lucania'. Ernest Fisk was the managing director of Amalgamated Wireless (Australasia) Ltd, and the station was constructed by AWA technicians for the occasion.

In 1935, the Fisk Memorial was raised by the local community to commemorate the event. The 2008 celebrations were conducted by the Wahroonga Amateur Historical Radio Association, the Hornsby and Districts Amateur Radio Club and the Ku-ring-gai Historical Radio Society.

Jo Harris VK2KAA gave a short talk and played a recording of a speech by Guglielmo Marconi, and Peter Jensen VK2AQJ displayed his reproductions of period Marconi wireless equipment. An original print commemorating the event, incorporating facsimiles of the original AWA message forms, was displayed with the kind permission of the owners of 'Lucania'.

The event was well attended by radio amateurs and members of the local community, with a number of passing pedestrians stopping to ask questions and taking a copy of the informative pamphlet. Tim Mills VK2ZTM explained the story of the figure of Mercury (aka Jimmy).



The figure of Mercury, also known as 'Jimmy'.

As a result of previous theft and vandalism, 'Jimmy' is removed and only attached once a year for the commemoration. The last time this figure of Jimmy was stolen, it turned up in a rubbish tip in Atherton, VK4, some 2500 km away.

Further reading:

The First Direct Wireless Messages from England to Australia, Colin MacKinnon VK2DYM (SK)

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Peter Jensen VK2AQJ and his reproduction wireless equipment display.



A view of Sir Ernest Fisk's former home 'Lucania', in Wahroonga, in suburban Sydney.



Peter Jensen VK2AQJ explaining his reproduction wireless equipment to interested visitors to the Fisk Memorial site.

Contests

Phil Smeaton VK4BAA

Contest Calendar for May 2009 – July 2009

May	9/10	CQ-M International DX Contest	CW/SSB
	9	VK/Trans-Tasman 80 metres Phone Contest	SSB
	16/17	King of Spain Contest	CW
	30/31	CQ WW WPX Contest	CW
June	6/7	IARU Region 1 Field Day	CW
	6/7	VK Shires Contest Rules this issue	SSB
	13	Asia/Pacific Sprint	SSB
	13	VK/trans-Tasman 160 metres Phone Contest	SSB
	13	Green Days Contest (see text)	CW/SSB/Digital
	20/21	All Asia DX	CW
	20/21	Winter VHF/UHF Field Day	All modes
	27/28	Marconi Memorial Contest	CW
	27/28	ARRL Field Day	All
July	1	Canada Day Contest	CW/SSB
	11/12	IARU HF Championship	CW
	12 (TBC)	Jack Files Memorial Contest	CW/SSB
	189/190	CQWW VHF Contest	All modes
	19	VK/trans-Tasman 160 metres CW Contest	CW
	25/26	RSGB IOTA Contest	CW/SSB

Welcome to this month's Contest Column.

The sad demise of the ANARTS RTTY Contest

Pat Leeper recently informed me that she would be unable to continue managing the ANARTS RTTY contest due to failing health. Pat has made every effort to find someone else to take over the contest but with no success.

BARTG have had close links with ANARTS over the years and BARTG felt that they could help in some way. After discussions between Pat and the BARTG committee a decision has been reached on a course of action which I hope will meet with the approval of the RTTY contesting community.

For this year only the contest will be managed by John GW4SKA, the BARTG contest manager, with help towards expenses from ANARTS. The rules are much the same as in previous years but logs must be sent direct to anarts@bartg.org.uk.

The rules can be found at http://www.anarts.com.au/rules2009.htm and they will also be available on the BARTG website shortly. This will save any disappointment for those of the RTTY persuasion who have made plans to enter the contest this year.

It is sad, but it appears that 2009 will be the last running of the ANARTS RTTY contest. From 2010 BARTG will be moving the BARTG HF RTTY contest from March to the 2nd weekend in June. This will give RTTY-ers a bit more time between Sprint and HF contests but also avoid the March clash of dates with the very popular Russian DX contest.

My thanks go to Pat for her cooperation and hard work in running the previous contests.

WPX SSB Contest 2009 – will the REAL sunspots please stand up?

The WPX SSB contest was interesting this year. No sign of the awaited and much promised sun spots, so most of the traffic for the contest went LF – well almost! Top band seemed a little quiet from VK4 and 10 m was much the same also from this neck of the woods.

But VK contesters are made of stronger stuff and the absence of a few blemishes on a heavenly body did little to curb enthusiasm. Talking of blemishes on a heavenly body, my hearty congratulations go to Andrew Munson VK4HAM on producing his own imminent population explosion in Toowoomba. Andrew's wife Sharon is expecting their second offspring later this year. This comes as little surprise to those who know Andrew well and have operated a contest alongside him, as he obviously had to be good at something!

A group of like-minded chaps got together at my place to assemble whatever radio hardware that could be mustered into resembling a contest station. The antenna system was a bit of a compromise in places, but we managed to cobble together a monobander for 10 m and another for 15, a tribander for 20 m and an assortment of aluminium poking into the air for LF. Gravity played a cruel trump card however, in that Andrew's crank-up mast decided that holding an antenna aloft was not how it wanted to spend the weekend, and down it came – vertically thankfully – and telescoped back into itself with a loud thud. The winch cable had broken. The 20 m antenna elements wagged around in the air like an over exuberant dog's tail, but the central mountings for the elements onto the boom did not see the funny side and instantly broke in two. I had some spare parts, but the resultant hurriedly

repaired antenna was a shadow if its former self and performed accordingly when shown some RF. So, with the 20 m antenna now relocated to the highest support that we could muster, the 15 m monobander reluctantly shuffled across to being second in the pecking order – and sat sulking for the next 48 hours at 5 m off the floor.

HF proved to be a tad wobbly as regards propagation over the weekend, with 80 m wagging around between the US, then JA, then EU and back again. 40 m was quite good and our bits of aluminium pole seemed to do the job. 20 m was pitiful, but 15 m went like a bomb! The terrain of the land lent itself to the performance and we managed to snare a healthy number of QSOs into the log.

We worked quite a number of VKs during the contest: Laurie VK7ZE was hammering away on 20 m as a single band entry and the pride of WA VK6ANC were setting the ether alight in the Multi-single category with their impressive new set-up.

Was there a downside to the weekend of socialising and radio? Well, only the usual 'Contest Police' who roam the bands during such events looking for something to whinge about. Cries of "Your signal is wide" or "You are using too much power" are usually the cry of those with a front end as wide as the bridge across Sydney Harbour as a lament to those putting time and effort into assembling large LF arrays. I was no stranger to this aspect that weekend as a chap seemingly wanted to discuss all-manner of topics about how strong my signal was – but he had not considered that he was S9+40dB to me so clearly we were both receiving each other with consummate ease. However, my receiver could easily handle the strong signal and did not overload – seemingly his could not. Nor did he want to learn something evidently new to him about the front end of receivers....

A change of receiving antenna dropped the howls of protest from him into the ether and I continued having fun in the contest. No doubt, just like others of a kindred spirit, he QSYd to find something (or someone) else to complain about. A lot of time, effort and money has gone into the design and implementation of the LF systems at my station and I am not about to bow-down to the seemingly tall poppy syndrome that raises its ugly head at times during contest weekends.

Anyway, we (VK4TI, VK4NDX, VK4HAM, VK4SN and our humble scribe) had a fun weekend regardless.

WPX Scores for 2008 – Addendum

I have been chastised by Tony VK3TZ! Tony writes: "Please could you include my score from YJ8TZ as an addendum, as I was number 9 in the world in the TS category high power. I actually got a certificate that I was 6th but they stuffed it up somehow. Also came 3rd in Oceania overall, missing out on #2 by a very small margin to a KH6".

Tony's score was 2,776,869 from 1921 QSOs and 513 prefixes. Nice going, Tony - sorry about the omission!

Ethical? Probably not.

Some interesting contesting tactics were observed during the contest. A certain gentlemen residing in Oceania, teamed-up with a chum in EU and his European pal proceeded to call CQ within EU stating that his mate was also on the frequency. This is an effective way to break through the EU wall of noise but is, of course, not in the spirit of the contest nor is it legal in my opinion as regards the rules. I understand that the contest organisers have been made aware of this arrangement and by all accounts action will be taken.

BERU Comments and Claimed Scores

BERU claimed scores are shown below. The team changed at the last minute as John Loftus VK4EMM could not gain access to his usual station facilities. With much reluctance, John handed the baton to the first reserve and sat BERU 2009 out. Karl VK2KM has stepped into the breach and did a fine job in John's place.

Kevin VK6LW	6,390 points
Barry VK2BJ	5,510 points
David VK2NU	4,555 points
Karl VK2KM	4,530 points
Alan VK6BN	4,500 points
Mike VK6HD	4,405 points
Martin VK7GN	4,315 points
Steve VK6VZ	4,150 points
Russ VK4XA	2,830 points
Les VK4BUI	3,900 points

Thanks again to Steve VK6VZ for organising the team event – let us hope that the Team got another win in the bag!

There is some talk about the HQ stations, in that situations exist such as VE being one DXCC entity, yet is allowed potentially 7 or more HQ stations, whereas the UK consists of 7 DX entities, with only 1 HQ station. If the UK provinces were to become separate BERU entities, it is quite likely that the default winning location would move to the UK. One critical advantage of the current arrangement is the open playing field, in that BERU can be won from many different areas of the world, depending upon propagation on the day. Personally, I am not convinced that we need any HQ stations at all in BERU, let alone a whole heap more! I have yet to be convinced that having more HQ stations active will result in increased interest and activity in the contest. No doubt, time will tell.

Green Days Contest

Strange as it may seem (to me at least) for an electricity consuming contest to be denoted as 'green', news arrives that the World Flora Fauna organization have organized GreenDays and are asking for participation of radio amateurs all around the world to contact other radio enthusiasts working from territories of national natural parks and reserves of the world which are set off under program WFF.

The contest is intended to celebrate the first anniversary of the commencement of the World Flora Fauna program, and to raise awareness of the various issues pertaining to protected natural territories and the preservation of vanishing species of flora and fauna. The organisers recommend that stations call "CQ GreenDays" on SSB and "CQ GD" on CW. The ham radio inhabitants of the Isle of Man will no doubt be surprised to learn of the myriad of "CQ GD" calls being made on the bands! Further details can be found at http://www.wff44.com/en/contest/

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au.

John Moyle Field Day VK2AWA

The guys and gals of the VK2AWA Contest Group took to the bush to compete in the prestigious John Moyle Memorial Field Day Contest. The Contest Group Members who took part in the operation were:

Vlad VK2IM, Russell VK2VK, Tomas VK2CCC, Leonie VK2FHRK, Lisa VK2LKH, Phil VK2FIRE, Allan VK2OJ, Warren VK2UWP, Graham VK2FCLR, Tony VK2VAC, Richard VK2KRM and Paul VK2BPL.

Peter VK2YPW provided the use of his caravan for the weekend.

The antennas used were an inverted V dipole at about 18 metres for 160; inverted V dipole at about 18 m for 80; 2-element Moxon beam at about 18 m for 40; 3-element monoband Yagi at about 12 m for 20 and dipoles for 15 and 10 metres at about 7.6 m.

This year the conditions were very down but they managed to bag over 1400+ QSOs.

The contest was also the occasion for VK4HAM to show-off his newly acquired haircut – see photo. As reported last month, Andy was taking part in the World's Greatest Shave, but it looks like they got a bit carried away with the fringe. Maybe he should get Sharon to knit a balaclava whilst she's knitting the booties for the next junior operator....

See you on the bands.

73 de VK4BAA Phil Smeaton

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Up she goes! VK2AWA getting ready for the Moyle. Photo: VK2BPL.



Andrew Munson VK4HAM seems pleased with his haircut. Photo: VK4HAM.

New contest—Australian Shires

Hot from the keyboards of Bill Horner VK4FW and Trent Sampson VK4TI is news of a new contest for VK.

In the last few weeks there has been much excitement over the new contest and quite a number of contesters have been involved in the creation of the rules. Already, operators who intend to go to a rarer shire for the actual contest have been in touch with Bill and Trent to ensure that their station and location comply with the requirements of the contest rules. The contest offers the field day practice of the John Moyle, the DX potential of the Oceania Contest and the friendliness of the RD contest.

Some of the new style contest is the introduction of multipliers on every band and the ability for a rover station to rework everyone for extra points from a new shire. The organisers have also introduced a new VK Shires award to support the contest.

The objectives of this contest are for amateurs around the world to contact as many VK shires as possible in the contest period. VK amateurs are to work the world including VK, whilst the rest of the world can only work VK. For VK stations, the multiplier is each VK shire worked per band and mode as above as well as each CQ Zone worked per band and mode.

Interestingly, the contest organisers have heeded the cries of those who have less love for contesting and complain of increased band occupancy during contest weekends. Participants need to watch their operating frequency, else risk QSOs being invalid for points. The frequency limits are also meant to enable all licence holders to have a level playing field as far as possible.

Rules for the contest are over the page at the time of going to print, but check the website for the latest.



Rules for the Australian Shires Contest

The contest will be held on the weekend prior to the second Monday of June every year.

Starts: 06.00 UTC
Saturday, June 6, 2009

Ends: 06.00 UTC
Sunday, June 7, 2009

Contest Period: 24 hours for all stations, all categories.

Objectives: The objectives of this contest are for amateurs around the world to contact as many VK shires as possible in the contest period, i e VK amateurs are to work the world including VK, whilst the rest of the world can only work VK

A) Bands: 80 metres 3.500 - 3.700 MHz, 40 metres 7.000 - 7.250 MHz, 20 metres 14.000 - 14.300 MHz, 15 metres 21.000 - 21.350 MHz, 10 metres 28.000 - 28.600 MHz. Please note there is no 75 m DX window permitted for VK stations which means the rest of the world can operate above 3.700 MHz i.e. split operation.

B) Modes: SSB and CW only

Class of Competition:

For all categories:

Transmitters and receivers for a fixed station must be located within a 500 metre diameter circle or within the property limits of the station licensee's address, whichever is greater.

If you are a member of a multi op team you can not partake in the contest as an individual in any way. Please note that you are permitted to have up to two transmitted signals going simultaneously.

All contest operation must be within operator's licence restrictions and conditions, eg power output, bands used, etc.

Single Op stations are only permitted one transmitted signal at a time.

No operator is permitted to use more than one callsign for the entirety of the contest.

A Rover station is a VK station which goes either portable or mobile for the entirety of the contest. Please note that all portable equipment can not be set up prior to the Friday preceding the contest and no earlier than at 0001 UTC. The Rover who moves into a new SHIRE may count the same MULTIPLIER more than once per band as long as the Rover is in a new SHIRE location. Such change in location must be clearly indicated in the log. i.e. A Rover station becomes a new QSO to the stations working them when that STATION changes SHIRE locator.

Please note that in all categories below you may change band and mode as often as you like. You may also work the same station multiple consecutive bands/ modes one behind the other: e.g. work VK4FW on 20 m SSB then QSY to 15 m CW then QSY to 80 m CW then QSY to 40 m SSB etc.

1. VK Single – Op All Band Rover: Single operator(s) must do all contest related activities by themselves.
2. VK Multi – Two All Band Rover: Is 2 or more operators with maximum of two transmitted signals at any one time. This category MUST USE Software CONTEST LOGGERS. All operators must be fully listed when the log is submitted.
3. VK Single Op All Band: same conditions as number 1 above.
4. VK Multi – Two All Band: same conditions as number 2 above.
5. VK Single Op Foundation: Is a VK Foundation licensee who must do all contest related activities by themselves.
6. DX Single Op – All Band: Is a single op who must do all contest related activities by themselves.

Exchange:

All VK operators to exchange callsign, RST followed by the VK shire abbreviation as per the official list provided: e.g. VK4FW 59BU4 or 599BU4

Stations outside VK to exchange callsign, RST followed by CQ ZONE: e.g. ZL1AMO 5932 or 59932

Multipliers:

For stations outside VK: The multiplier is the number of different VK shires worked per band. A "VK shire" is counted once per band per mode: i.e. If you work it on SSB it can be counted again on CW .To enter the contest you must have worked at least one VK Shire.

For VK Stations: The multiplier is each VK shire worked per band and mode as above as well as each CQ Zone worked per band and mode.

NB. Variation for rover stations. Rovers can rework from multiple locations.

Scoring:

One (1) point per QSO

Multiply total QSO points times total number of multipliers worked (i.e. If you worked 33 on 80 m, 43 on 40 m , 16 on 20 m, 21 on 15 m and 5 on 10 m that would be a total of 118)

Example 1: VK4FW works stations as follows:

600 QSOs x 1 point = 600 points

118 VK shires worked + 35 CQ zones worked = 153

600 x 153= 91,800

VK4FW final score is 91,800

Example 2: ZL1AMO works stations as follows:

700 QSOs with VK amateurs x 1 point = 700

118 VK shires work

700 x 118 = 82,600

ZL1AMO final score is 82,600

Awards:

VK Stations: Certificates suitable for framing will be awarded to the top scoring stations in each category as well as place getters depending on entries received. A minimum of 100 QSOs must be made to be eligible to receive a certificate.

Stations outside VK: Certificates suitable for framing will be awarded to the top scoring stations in each category as well as place getters depending on entries received for each continent. A minimum of 100 QSOs must be made to be eligible to receive a certificate.

** *Please note we hope to be able to award a minimum of 4 certificates per category.*

The various categories listed below have been sponsored by the operators indicated for the next three years (until 2011).

Category	Donor
1. VK Single Op	Phil Smeaton VK4BAA
2. VK Multi Two	Laurie Porter VK4VCC

3. VK Single Op Foundation	Nick Hacko VK2DX
4. VK Single Op Rover	John Ferrington VK6HZ
5. VK Multi Two Rover	Trent Sampson VK4TI
6. DX Single Op	as below
a) North America	Craig Edwards VK5HRT
b) South America	Dave Clifford VK4NDX
c) Asia	Diane and Bill Main VK4KYL and VK4ZD
d) Europe	Andrew Munson VK4HAM
e) Africa	Paul Hanna VK2HV
f) Oceania	Robert Duck VK2VRD

Miscellaneous:

An operator may sign only one callsign during the contest. This means that an operator cannot generate QSOs by first signing his callsign, then signing his daughter's callsign, even though both callsigns are assigned to the same location.

If in fact a fixed VK station is located on the border of more than one VK shire, they must choose only one VK shire from which to operate.

Utilising the various internet DX clusters etc is permitted however ANY FORM OF SOLICITED OR SELF SPOTTING INCLUDING CLUB MEMBERS SPOTTING CLUB OPERATIONS WILL RESULT IN NIL RESULT OF THE LOG.

Any use by an entrant of any non-amateur means including, but not limited to, telephones, email, Internet, Instant Messenger, chat rooms, VOIP, or the use of packet to solicit, arrange, or confirm any contacts during the contest is unsportsmanlike and the entry is subject to disqualification.

Aeronautical mobile or maritime mobile contacts do not count [for points].

UTC is the required logging time.

Log Submissions:

Log entries must be submitted by September 1, 2009 to be eligible for awards. Submit your electronic log in the Cabrillo format created by all major logging programs. Send via e-mail attachment to contest@vkshires.info

Subject line: Callsign (used in the contest) only. SINGLE OP stations may submit a paper log, only if they make less than 100 QSOs.

VK entrants are reminded to be sure their log indicates their VK shire location. If you go portable or mobile the log must clearly define where you changed location.

Click on the "VK SHIRES Web Form" link on the contest website at: www.vkshires.info

Computer-generated logs must be e-submitted. Callsigns of electronic logs received are posted and updated regularly on the website.

Any queries or enquiries please email vkshires@vkshires.info

A great deal of work has been spent putting the rules together but the organisers acknowledge that questions will arise and that queries will be welcomed and promptly answered. One area of probable concern might be that Weipa is not currently allocated to a VK shire and operators from that part of VK will not be able to give the correct contest exchange from their home QTH. However, there are a number of VK shires that do not have an amateur located in them and the Rover category might prove to be highly beneficial to them during the contest.

www.vkshires.info

73 de VK4BAA Phil Smeaton

SERG at MT Gambier *from page 39*

Racing incidents requiring a stoppage were announced immediately and racing was paused. Safety issues were reported immediately on 146.550 MHz as this was away from the calling frequency and repeaters.

Various radios were used: many hand-helds, some mobiles in cars and, in high traffic or difficult locations, some higher power mobiles on 10 W from a battery.

Some of the positions were comfortable, operating from cars or other shelter. Communications points 4 and 5 however were rather exposed on the side of the track halfway up the hill.

A little rain and some wind added chill factor started to show on the operators. To make it easier nobody spent more than half a day at CP4 or CP5. The view from these points is rather spectacular.

To assist with promoting the event, and for the enjoyment of all, the Channel 37 TV transmitter was in the Centenary Tower, a very high point. To get the signals from the OB van to the transmitter, an ATV transmitter link was used. Colin VK5DK and Andrew VK5KET have been experimenting with ATV since before the 2007 event and 1250 MHz was used for the link to the broadcast transmitter. During the preceeding week a test was done at the venue.

There was some concern over attenuation through the trees but a six metre mast took care of that.

The transmitter is a 1250 MHz ATV kit with a PLL Kit and audio sub-carrier board, all from Mark VK5EME at Mini-Kits. Colin did an excellent job of building them up.

With the Yagis built by Colin, 8 mW gave excellent pictures into the UHF transmitter. The link ran faultlessly. During testing a vertical line was on the transmission, however a quick email sent to Mark at Mini-Kits elicited a solution. We are very impressed with the kits from Mini-Kits and the service and support is excellent. Thanks Mark. The 70 cm ATV link is also a Mini-Kit design.

SERG had 20 members and six friends helping. VK5's ZGY, NC, XCP, FRED, DK, AKJ, NKJ, JFK, KET, FCLS, EE, GL, FWJT, FJIM, DG, KEE, FOXX, LAC, ZOO attended at some point over the weekend and we had Ollie and Owen in the OB van, Mike and Darlene at Chicane camera and Terry and Sheryl (XYL FCLS) taking photos.

The weekend numbers:

There were 110 competitors that raced in two blocks. All finishing competitors made 8 runs on the course; approximately 850 runs were made up the hill.

Excellent operator practices resulted in cars being released every 40 seconds.

Trevor VK5NC called 856 cars to the start line and Greg VK5ZGY recorded and tracked all 856 cars, course cars and recovery vehicles.

There were 50 track check calls, 35 information calls and 28 incident calls.

Estimated top speed for the winner was over 200 km/hr. Winning time was 54.36 sec.

Linley VK5FRED took just over 3000 photos and ran her batteries flat. Six four-hour video tapes were used to record the action.

Best of all, nobody was seriously injured.

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DX - News & Views

John Bazley VK4OQ
email: john.bazley@bigpond.com

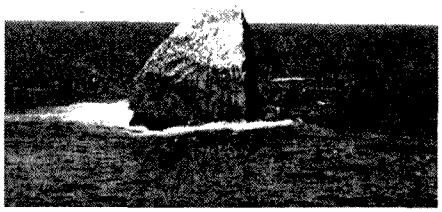
Reefs, Rocks and other remote spots

By the time you read this the VK9M **Mellish Reef** trip will have taken place and hopefully all returned home safely. To me it is incredible the trouble and risks taken by some of these operations. For example - quoting from a bulletin issued by them on March 20th when they were en route to Mellish Reef:

Friday, March 20 0800 UTC, Marion Reef. Extreme WX conditions continue preventing us from leaving Marion Reef. Winds are 40 knots + (75+ km/h) and waves are 12 to 16 feet (3.5-5 m) high outside the reef. The low-pressure system behind this extreme weather is now forecast to develop into a Tropical Low by Mar 21 and a Tropical Cyclone by Mar 23. Movement is forecast to be to the north and north-east (away from us and from Mellish), but the forecast is tentative at this stage. We will keep a close eye on this system as it poses a serious danger to us. While waiting at Marion Reef we have been testing our equipment (and making a number of MM QSO-s). We have found that the K3 got damaged in transport. With great on-line support from Wayne N6KR of Elecraft, we were able to fix it.

Still on the subject of hazardous operations, I note that Theo ON4ATW and others have a plan to activate **Rockall (EU-189)** for three days during the first week of May using the callsign MM0RAI/p. A dedicated website is under construction and is expected to be launched by the end of March.

Hazardous? Well you can form your own opinion! Rockall is a small, uninhabited, rocky islet in the north Atlantic Ocean, about 25.3 metres (83 ft) wide and 31 metres (100 ft) long at its base and rises sheer to a height of approximately 21.4 metres (70 ft). It is regularly washed over by large storm waves, particularly in winter. There is a small ledge of 3.5 by 1.3 metres (11 by 4 ft), known as "Hall's Ledge", 4 metres (13 ft) from the summit. They will be doing well to stay there three days!



Rockall Island

Forthcoming DXpeditions include 9M6XRO, returning once again to **Africa.** He plans to travel to Johannesburg via Kuala Lumpur and Doha on July 25th. He will help ZS6JR load and move gear to Lesotho, 7P, and set up antennas and gear before the rest of the ops arrive on July 29th. He hopes to have ZS6/GM3OOK on the air while en route, possibly the evening of July 25th. He also feels he may be able to operate as 3DAOOK from Swaziland, the dates depending on how the rest of the operation goes. Everyone is due back in Johannesburg August 13. The flight back to Borneo is August 14th, via Doha. QSL via M0URX.

In spite of rumours that the **YW0A Aves Island** DXpedition operation has been cancelled everything is in order for the upcoming expedition. Navy permission has been received for an April-May operation. Exact dates are still being negotiated. The YW0A DXpedition Web site can be found at www.yw0a.4m5dx.info

Wayne W5KDJ may postpone his July DXpedition to **Madagascar.** He may try again in November. Understandably, Wayne says the political situation is too unsettled to go at present.

We have not received any news or updates from either Flo FT5WO or Petrus ZS8T. You may recollect that Flo is on **Crozet** until the end of this year. On the other hand Petrus is on **Marion Island** until April or May. Not much time left now for some serious amateur radio activity but we must remember they are both on those remote islands on work assignments and not DXpeditions.

Bodo DL3OCH/HB9EHJ is now in **Abuja, Nigeria.** His equipment consists of a TS-450, IC-7000, IC-706, 50 A power supply, 5-band Spiderbeam, 10 metre mast, mono-band vertical for 30 m, 40 m and 80 m. At the moment Bodo is not sure yet what kind of antenna will be used for 160 metres but he is planning to be active on Top Band. He has been assigned the call sign 5N0OCH, which he will use for all short wave activities.

Bodo plans to be on the air mostly in the evenings and on weekends on CW but he will also be on SSB and RTTY. EME antennas and amplifiers have also arrived safely in Nigeria. Bodo will team up with some other 5N ops for EME activities. He also has plans to activate IOTA AF-076, but no details at the moment. All QSLs (bureau or direct) go via DL3OCH. He will answer all cards after his return to Switzerland in August. Further information can be found at http://www.dl3och.de/

Just another reminder for the future! After a seven-year hiatus, in late January 2009, the US Fish & Wildlife Service announced that they would once again allow amateur radio operations from **Midway Atoll** (OC-030) "on a trial basis". A multi national team of 19 operators will be active as K4M from Midway for ten days between 5th and 19th October. They will have 5-6 stations active on 160-6 metres, with at least one station on 20 m around the clock. Further information, including details on how to contribute to this expensive expedition, can be found at www.midway2009.com

VK6AA will be on from **Western Australia** in the WPX CW event May 30-31. Operator VK2IA will be single band 40 m. He will be at the radio club station 20 km north of the centre of Perth. QSL via DL8YR. You can find out more about the station at this site: http://www.ncrg.org.au

A team from ARI San Severo and a few guest operators will be active as IL7G from the **Tremiti Islands** (EU-050) from 30th May to 2nd June. They plan to operate CW, SSB and RTTY on 160 m – 70 cm, and to participate in the 13th Gargano Contest (31 May, 6 m CW and SSB). QSL via IW7EBE, direct or via the bureau. The logs will be uploaded to LoTW. Further information can be found at www.qrz.com under IL7G.

Continued foot of page 47

Spotlight On SWLing

Robin L. Harwood VK7RH

Monitoring the extended 7 MHz amateur allocation — 7100 and 7200 kHz

When the new season commenced at 0200 on the 29th of March, we were excited to start monitoring the extended 7 MHz amateur allocation between 7100 and 7200 kHz.

It has been extremely interesting observing the changes day by day, as broadcasters vacated to other channels leaving it to the amateurs to enjoy. Coincidentally that weekend saw a major amateur DX contest and there was plenty of activity from Europe and North America yet few from Australia. The only ones observed were the few regulars who have skeds with North Americans.

It took several days for broadcasters to depart and as expected the Chinese were slow to do so. Apparently several clandestines also operate in this segment and the Chinese seem to utilise their HF signals as a de facto jamming signal.

I am excited at what I have so far heard, despite my limited indoor antenna. There is a clandestine on 7100 between 2000 and signing off at 2059 and initial reports indicated it was directed to Ethiopia. However the language and music sounded very similar to that Kurdish PKK station, which was on 7510. The anthem at the signoff sounded identical.

Then there were several Chinese signals, 7125 carried the Minorities Network known as CNR-8 and is easily heard in our local mornings and in the evening hours. It is parallel to 6200, which is reported to be Tibet. However the Chinese have separated Tibetan from the Minorities Network and created CNR-11 in Tibetan.

There are also Chinese signals on 7120 and 7105 but these are well down and could be jamming known Taiwanese signals. 7105 also used to be the BBC from both Thailand and Singapore in Chinese but they too have migrated elsewhere. There seems little point for them to be there. However the Chinese deny they jam and say that their stations are legitimately there to service local audiences.

7185 sees several signals with two or more Chinese signals carrying identical programming with each sender being delayed to give an eerie echo effect. This is against a long-standing Taiwanese network that has been there for many decades. 7100 sees North Korea occasionally but Pyongyang is on 7140 in various languages and is in parallel to 3560.

Once the dust settled and hams discovered the vacant channels, they were excited at what was on offer. I heard an Italian at very good strength at around 2145 being called by a K1 from Boston. He was as equally surprised as I, because I too could hear him via the long path. It was 5:45 pm EDT in Mass, which meant it was about sunset there and half an hour after my local sunrise. There is a well-known VK7 DXer in the Tamar Valley that should have been there. Hi Norm!

The other news is that the Russians have revamped their web presence with a new URL and expanded their language services online as MP3 files. Unfortunately they have cutback their presence on shortwave by eliminating 12 languages and some of these are now a short five minute podcast. They made a big announcement that the Voice of Russia World Service was reverting to a 24/7 format but do not be deceived. It is available on the web.

The VOR to Australasia is on from 0600-0900 21790 and 17635, and from 0900-1000, 21790. You could also try these services as well:

ASIA
0300-0500 15735, 15755, 15585
0700-0900 1251
0900-1100 15610, 15470
1100-1200 15470, 12065,
1200-1300 15470, 12065, 7330, 603
1300-1400 12065, 7330.

Deutsche Welle from Cologne is being heard from their Trincomalee Relay on 9735 in English from 2100 to 2155. It is a very good signal. I also noticed the BBC World Service on 6195 in English from 2100 to 2200 and judging by the signal strength it must be coming either from Brandon or Shepparton, here in Australia. RA has been running this service on 11690 and 9660 at the same time so I am assuming they are now on 6195.

Well that is all for this month. If you have any news, please email me at vk7rh@wia.org.au

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DX Continued

Some QSL information.

A note from Roger G3SXW: *A station signing EP2IA has been QRV this week on 40 metres CW, asking for QSL via qrz.com. This was my call in the 1970s but I know nothing about the current operation. If the call-sign has been re-issued I would expect him to give a valid QSL route. But qrz.com points at G3SXW so I must conclude that this is a pirate operation.*

QSLs via 3A2LF. Claude 3A2LF is closing the logs for 3A100GM (1995), 3A7G (1997) and 3A50R (1999). If you still need a card, please go direct to Claude Passet, 3 allee Guillaume Apollinaire, MC 98000 Monaco. Claude still has blank cards for other special callsigns, please e-mail him (cpasset@monaco.mc) and check for availability.

There has apparently been questions about the QSL route for H40FN, operated by Siegfried Hari DK9FN who was on Pigeon Island (OC-065), along with Bernard H40MS (DL2GAC/H44MS) and Hermann H40HP (DL2NUD). Bernard H40MS says HA8FW is the correct QSL route for H40FN. This is the route that has been mentioned in all of the previous press releases as well as what Siegfried has been giving on the air. The listing on QRZ.COM says DK9FN and this needs to be updated.

Good luck in the pile-ups.

Special thanks to the authors of *The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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AMSAT

David Giles VK5DG

How to use AO-51's 2.4 GHz downlink

So you have tried AO-51 in mode V/U with a couple of handhelds and small Yagis. Want to try another challenge where the antennas are smaller, the downlink is louder and the competition is less? AO-51's most powerful transmitter is on 2401.2 MHz and is not much harder to use than the 70 cm downlinks. During March I constructed a simple 13 turn helix, put it on a camera tripod and made a few QSOs. But first some background.

Description of AO-51's 2.4 GHz setup

The 2.4 GHz transmitter on AO-51 operates as an extension of the 435.300 MHz transmitter. It can be used with or instead of the 435.300 MHz transmitter. Its modes of operation are FM voice or digital with baud rates of 38400 or higher. It cannot be modulated properly for 9600 baud digital operation.

The antenna is positioned in the centre of the same face as the 70 cm canted turnstile. It is a sleeve monopole antenna that shares the same connector as the 1268.7 MHz receiver antenna. It is similar to a ¼ wave groundplane and has low gain and is linearly polarised.

The transmitter is electrically less efficient than the 70 cm transmitters and has a fixed output of 1.2 Watts. This limits its use to periods with short or no eclipses.

How does it compare with 70 cm? A bit more theory.

So how does it compare with a 70 cm portable transceiver and small Yagi? This section is based on the link budget calculator from the AMSAT-NA website[1]. First we look at the 70 cm downlink with a power output of 0.5 Watts (+27 dBm). The antenna gain is 2 dBic (circular polarisation). At the horizon the path loss over the maximum range of 3000 km is -155 dB. Take away another 3 dB for polarisation mismatch (circular to linear) and 1 dB for ionospheric disturbance and the signal level is only -130 dBm. At the ground station end we have an Arrow antenna with a gain of 7 dBi and a FT-817. The FT-817 sensitivity is specified for -122 dBm on FM to receive a minimum usable signal. Adding all the above gives:

Satellite Tx (minimum)	+27 dBm
Antenna Gain	+2 dB
Path Loss	-155 dB
Polarisation mismatch	-3 dB
Ionosphere	-1 dB
Hand held Yagi gain	+7 dB
Signal at FT-817	-123 dBm

So you might hear it at the horizon, just. When AO-51 is overhead (~800 km away) the path loss improves to -143 dB so the signal now is -111 dBm; a 12 dB increase or S3 on the S-meter.

For 2.4 GHz, the Tx power increases

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

In South Australia

VK5TRM Loxton on 147.125 MHz

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-VK HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

to 1.2 Watts (+31 dBm) and the path loss becomes -170 dB at 3000 km. The antenna gain and polarisation mismatch remain the same. So far it looks 11 dB worse. The ground station antenna is now a 13 turn helix with a gain of +16 dBic [2],[3]. The MMDS downconverter has a noise figure of 3 dB which translates to a sensitivity of -132 dBm. Adding all the numbers gives:

Satellite Tx (minimum)	+31 dBm
Antenna Gain	+2 dB
Path Loss	-170 dB
Polarisation mismatch	-3 dB
Ionosphere	-1 dB
13 turn helix gain	+16 dB
Signal at downconverter	-125 dBm

So the signal level is now 7 dB above the downconverter's noise floor. At the horizon, you can hear that clearly. To get the same result on 70 cm you would need to add a low noise pre-amp or quadruple the size of the antenna. Overhead the path improves to -158 dB and the signal is now 19 dB above the noise. The 13 turn helix is only 40 cm long, half the length of the 6 element 70 cm Yagi.

But it is not all good news. The antenna on AO-51 is in the middle of the face that points away from the Earth over the South Pole. The body of AO-51 will shield the antenna from us causing deep but short fades as it turns.

2.4 GHz also has trouble getting through foliage. Some successful AO-40 users found that one essential tool they needed was a chainsaw.

Finally the Doppler shift is proportionally greater. From +/-9 kHz at 70 cm to +/-45 kHz at 2.4 GHz. With FM this is not much of a problem. Using 5 kHz steps it is easy to manually keep track of the Doppler shift.

OK I'm convinced. So what do I need to hear it?

A receive setup needs an antenna, a downconverter and optionally a bias tee, an attenuator and a test oscillator.

The most critical piece in the puzzle is the downconverter. Most common are the Multipoint Multi-channel Distribution Service (MMDS) downconverters used for terrestrial data links. These are broadband converters with an input range between 2.1 to 2.7 GHz and an output between 100 and 500 MHz, depending on the model. Generally they fall into two types for the Australian and US markets. The Australian versions use a 1951 MHz local oscillator that converts the 2401.2 MHz signal down to 450.2 MHz. These are suitable for most 70 cm receivers and usually need no modification. The US versions use a 2278 MHz local oscillator that converts down to 123.2 MHz. Again many receivers will tune to this area in the aircraft band. Matt VK2DAG has compiled a list of available types on his website [4].

Some of these converters have been modified by changing the reference crystal to give an output in an amateur band. One advantage of leaving the downconverter's output outside of an amateur band is that it is harder to damage them by accidentally transmitting into them. The best downconverters have an external antenna connector, usually an N type. The output connector is usually an F type used for satellite TV receivers.

If the local oscillator frequency is not known there are two ways of finding it. By listening to the local oscillator's crystal frequency or using a test signal. The first method needs a HF receiver. The local oscillator is a phase locked loop design with the output frequency divided by 128 or 256 and referenced to a crystal oscillator. So for an Australian MMDS downconverter there should be a strong signal near 1951/128=15.242 MHz or 1951/256=7.621 MHz. For an U.S. Model 2278/128=17.797 MHz and 2278/256=8.898 MHz. There is some variation between units and the local oscillator frequency can be up to 50 kHz away from what you would expect.

Any of the transverters used for 2.403 GHz terrestrial duty will work as well if not better than a MMDS downconverter. As long as the receive noise figure is below 7dB.

The second method is to use a test signal. Laboratory grade 2.4 GHz signal generators are rather esoteric pieces of equipment. But for our purposes, a test signal generator can be made very easily and cheaply. All that is needed is a 5 V computer crystal oscillator module and listen for the harmonic. The 100th harmonic of my 24 MHz oscillator is easily heard across a room. The 24 MHz signal is also heard on 144 MHz and 432 MHz. 32, 36, 40, 48 and 50 MHz oscillator modules can also be used. My oscillator block has wires soldered to it for the 5 volt supply and an antenna wire just 31 mm long and can be heard across the room. A couple of versions can be found at the AMSAT-ZL website [5].

The next vital part is the antenna. It is better to use a circularly polarised antenna and suffer the 3 dB polarisation mismatch than use a linear type and suffer a 20 dB polarisation mismatch as you turn it the wrong way. Antenna gain is easy to obtain at 2.4 GHz and still have a physically manageable antenna. You do not need a dish. A small helix is simple to construct and works well. A circular patch (for a dish feed) also works but only has a gain of 8 dB and is not much better than the 70 cm example setup. Using a "BBQ grill" with a gain of over 20 dB also works. But it is heavier than a helix and needs greater pointing accuracy.

Downconverters are fed d.c. power via the coax. Some sort of bias-tee is needed. The power requirements are 200-300 mA at 12 V. They all have an on-board voltage regulator. Some of the US types use an internal 12 V regulator and need 16-18 V. These are easy to make. You need a small inductor between the d.c. supply and coax to the downconverter and a d.c. blocking capacitor between the receiver and the inductor. The air wound inductor can be 10 turns with a 3 mm diameter. The capacitor can be 100 pF. Values are not critical.

The final but optional piece is an attenuator in front of your receiver. Downconverters have high gain IF amplifiers and generate plenty of noise. You will know your downconverter is plugged in and powered up when you see a S8 noise floor. A 10-20 dB attenuator will improve your receive setup by giving some dynamic headroom.

Operating quirks

Mode V/S (Uplink: 145.880 MHz, Downlink: 2401.2 MHz): By now you may have worked out the emphasis of this article is using the 2 m uplink and voice modes. You are right. I have not used the digital downlink as I do not have a TNC capable of 38400 baud. Also I do not have a reliable setup for the 1268.7 MHz uplink. Mode V/S voice is the most popular use of AO-51's 2.4 GHz downlink.

It appears that using a downconverter/ transverter with a 2 m IF would cause desense problems. My DB6NT transverter gives an output of 145.2 MHz and the uplink is around 145.9 MHz. With the antennas far enough

apart and the 700 kHz between uplink and downlink, desense has not been a problem. The MMDS with 450 MHz and 123 MHz output show no desense. Mode V/S naturally shares the same uplink characteristics of mode V/U.

Mode L/S (Uplink: 1268.7 MHz, Downlink: 2401.2 MHz): During 2005 I borrowed a 1268 MHz transmitter. During one week AO-51 was in mode V/S voice then mode L/S voice so comparisons could be made. Those of us who tried it found that it was harder to get through the satellite with mode L/S than with mode V/S.

The proof of the pudding

During March AO-51 was set to mode V/S and V/U simultaneously. I was able to try out my freshly made helix mounted on a camera tripod in the backyard. This was used with 3 different downconverters (Australian MMDS, US MMDS and DB6NT transverter) feeding a FT-817 receiver. For 70 cm I used a home-brewed 6 element 'cheap-Yagi'. The 2.4 GHz setup signals peaked 8-S points above their noise floors and were down to S2 at the horizon. The 70 cm setup struggled to get to S3. While the S-Meter on the FT-817 does not follow the 6 dB per S-point definition, it shows that the 2.4 GHz downlink is much stronger than the 70 cm downlink, thus proving the theory.

Summary

For little outlay and a bit of experimenting and construction you can experience the loudest transmitter AO-51 has to offer. The performance of the 2.4 GHz downlink is much better than the 435 MHz downlinks. This was confirmed during tests made in March.

References

[1] http://www.amsat.org/amsat-new/echo/Echo_Linkbudget.php

[2] James Miller G3RUH, A 16 Turn S-Band Helix, http://www.amsat.org/amsat/articles/g3ruh/117.html

[3] Clare Fowler VE3NPC, Real World Helix Antenna Comparison Measurements, The AMSAT Journal Volume 29, Number 3 May/June 2006

[4] Matt VK2DAG, Australian MMDS types, http://web.aanet.com.au/vk2dag/types.html

[5] A simple 2.4 GHz signal source, http://homepages.ihug.co.nz/~jpsl/a_simple_3.htm

Introduction to me

Recently Paul VK2TXT asked for volunteers to contribute articles for the AMSAT column, and I decided to have a go. I was first licensed in 1986 and have been actively using OSCARs since 1997. Since AO-40 went silent my main focus has been with the analogue satellites and the Cubesats. I have listened to just about all of them on every used band from 29 MHz to 24 GHz and talked to the world through some of them. Sometimes the world spoke back.

The biggest highlight was hearing AO-40 for the second time. I first heard AO-40's 2 m beacon before that transmitter went silent. The second time was the 2.4 GHz S2 beacon using a BBQ grill tied to a iron dropper, an MMDS downconverter, coax without a connector (did not know what an F-type plug was at the time) out in the back yard at 5 am on a cold autumn morning.

I could just hear the beacon above the noise from a spacecraft 55000 km away using a bodgy setup that would not work for the local MMDS TV system only 35 km away. The station has improved considerably since then but I still carry out the odd experiment in the backyard.

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First German Mars Mission makes sidestep to Venus

Ground station in Bochum generated echoes from Venus.

The team of German Space Agency AMSAT-DL reached another milestone on the way to sending a spacecraft to Mars on 25 March 2009. From ground mission control station in Bochum (located in the observatory IUZ Sternwarte) radio frequency signals were sent to Venus. After nearly 100 million kilometres of track and approximately five minute's delay they came back again as echoes from Venus and were received in Bochum. This was the first German success to receive echoes from other planets.

The transmitter technology for the planned Mars mission of AMSAT-DL was the last key component tested and fulfils its baptism of fire.

The AMSAT-DL prepares the first privately financed flight to Mars for the next possible launch window. This spacecraft is intended as a scientific and communication platform. In the last few years the largely honorary researcher of the AMSAT-DL developed and tested all essential components for this spacecraft. Many technical elements were successfully trialled on satellites in earth orbits.

With reception of its own echoes from Venus the ground commando station is ready for lift-off and the AMSAT-DL team is waiting in the wings to construct the spacecraft.

Development, design and construction of this first German Mars mission has been achieved through work by the AMSAT-DL and its partner organisations. Already a third of the total project costs have been committed. More work shall follow during the mission. To finance the specific construction costs and the launch costs AMSAT-DL tries to get financial support from the DLR (Deutsches Zentrum fur Luft-und Raumfahrt). There is a need for 20 million Euros.

The AMSAT would like to demonstrate that their approaches to low-cost space missions are feasible. For comparison, these days the ESA and NASA missions

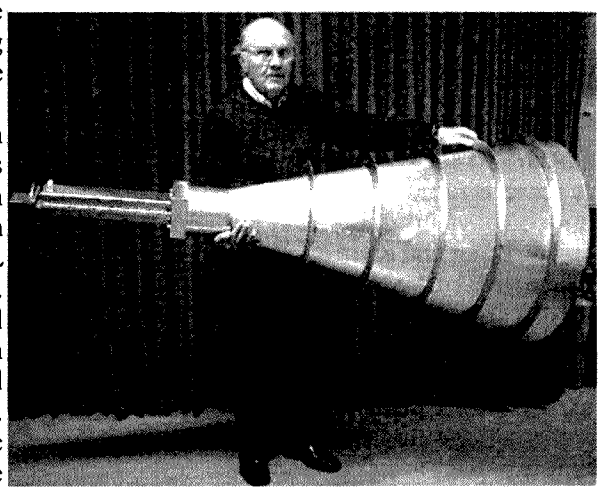


Photo 1: Project leader of AMSAT-Mars-Mission, Prof. Dr. Karl Meinzer with feeder antenna of the command station in Bochum.

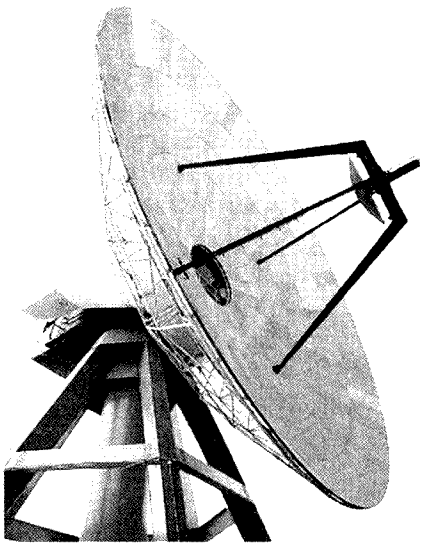


Figure 2: 20-m-Parabolic Reflector Antenna of observatory "IUZ Sternwarte Bochum" used by AMSAT-DL for the command station.

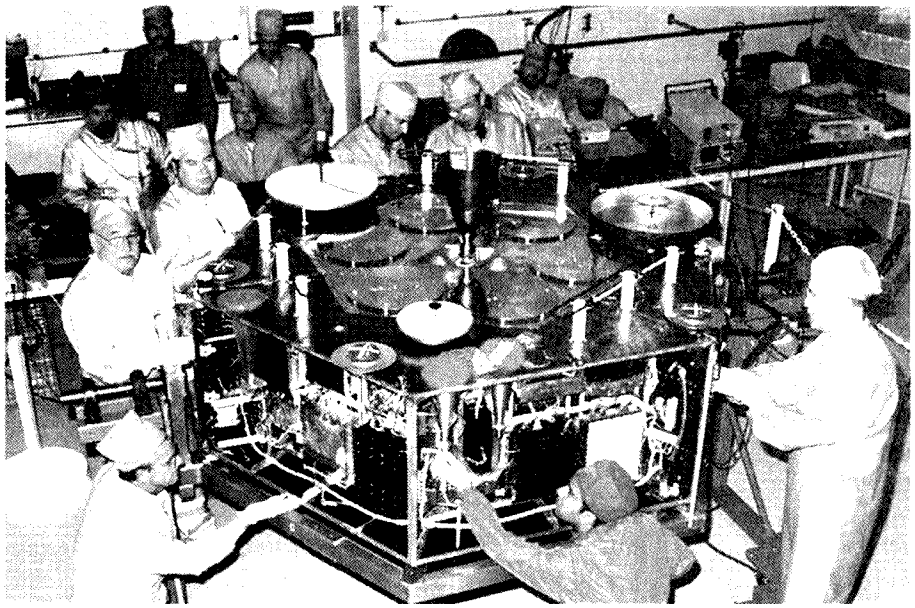


Figure 3: The technological foundations for the Mars mission was created by construction of earth satellite AO-40/P3D, launched n 2000 using an ARIANE 5 rocket.

to Mars have cost ten times as much.

The Mars mission is committed to the open source principle. Private donors can contribute to the mission. A website was set up for Mars tickets, http://www.ticket-to-mars.org Anyone can buy a ticket to Mars from fifty Euros.

Through the open source principle it allows everyone to receive the mission data live during the flight to Mars. This is possible by using amateur radio frequencies and one's own receiver with a dish of at least one metre diameter. If such equipment is not available then it is also possible to get a live stream via Internet. All necessary information will be disclosed before the mission.

Background information

The AMSAT-DL is an association of engineers, technicians, scientists, amateur radio and space enthusiasts who have over 30 years experience of satellite development, building and operation.

All photos: AMSAT-DL

Links:

AMSAT-DL: http://www.amsat-dl.org
Mars-Mission: http://www.go-mars.org
Ticket-to-Mars: http://www.ticket-to-mars.org
Venus transmission:
http://www.amsat-dl.org//index.php?option=com_content&task=view&id=165&Itemid=97

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Silent Key

Alan Peake VK2ADB

Alan Peake VK2ADB passed away on Wednesday 25th of February at Cooma Hospital. Alan was well known on air, being an enthusiastic CW operator who contributed to the VK2BWI Morse sessions and the "Fifteen words per minute net" on 80 metres over a long period of time. Alan was highly regarded for his skills as a CW operator, his Morse was precise and clear with an easily recognized and distinctive "fist".

Alan was President of the Snowy Mountains Amateur Radio Club at the time of his passing and will be sadly missed by his fellow club members and his friends "on air". His contribution to the establishment and management of our club is of great importance to us and will serve as a solid foundation for our future.

Professionally, Alan had a long career in Public Service in the field of electronics. A large part of that time being in the area of defence. He worked at various times with Australia's defence forces on weapons research. Alan retired in his late fifties and built his house on a small property near Adaminaby in the Snowy. Having retired, he was able to concentrate on his many interests, including amateur radio, rifle shooting and listening to classical music. Alan was a prolific home brewer and experimenter. His technical expertise was applied to projects ranging from antenna design to repair and maintenance of complex electronic devices, including modern transceivers and associated electronic equipment. His technical advice was often in demand by his friends in amateur radio and was always enthusiastically given.

Alan was an accomplished target shooter and represented his country as a member of national teams that traveled to Europe, North America, South Africa and Eastern Europe to compete. He was highly regarded by his fellow shooters and was made a member of the sport's Hall Of Fame. As a competitor, he was a winner of competition at a high level within the last few months of his life, to the amazement of his team mates and other participants.

Alan David Peake was quite an achiever in all fields of his choice. He was a stickler for attention to detail and his determination to achieve high standards in his endeavors will be admired and respected by all who knew him.

Family and friends will be marking Alan's passing by coming together to commemorate his life and deposit his ashes in a shady tree-lined grove near a creek on his property in the Snow Country.

Farewell and 73 Alan.

Submitted by Bill Steptoe VK2ZZF and fellow club members of the Snowy Mountains Amateur Radio Club.

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VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith - VK3HZ

On the afternoon of March 25th, there was another tropo opening from the east coast across to NZ – probably the last for the season. At 0140 Z, Bob ZL3TY reported hearing the Newcastle Channel 5A TV audio at S7. Eventually at 0715 Z, with Channel 5A still coming through, he managed an SSB contact with Steve VK2ZT on 2 m with 5x5/5x6 reports. At 0733 Z, Colin VK2BCC also worked Bob on CW with 5x1/5x3 reports. Several others were heard, but no contacts made.

Then on the evening of March 27th, the bands opened up across the Bight from VK3 to VK6. At 1230 Z, Mike VK3KH and Ross VK3MY reported hearing the Albany 2 m and 70 cm beacons and the Esperance 70 cm beacon, all at around S2. An hour later, the Albany 70 cm beacon had risen to S9 at Ross' QTH. However, it was a case of "no-one's home" and unfortunately no contacts were made.

There has recently been a surge of interest in the 23 cm band, and there are now a number of stations with high power, good antenna systems and sensitive receivers. The current National record on 23 cm was set 21 years ago between Les VK3ZBJ (SK) in Frankston and Wally VK6WG in Albany – a distance of 2455 km. I think it's highly likely that this record will be broken in the next year or two but, of course, it requires everything to come together – conditions and people on-air at each end!

70 cm Band

The ACMA have been undertaking a review of what they refer to as the 400 MHz band (403 - 520 MHz). The review specifically excluded any consideration of changes to the 430 - 440 MHz area, but it did include a review of the remainder of our 70 cm band. A recent update from the ACMA has now also excluded any changes to the 440 - 450 MHz area, much to the relief of the ATV enthusiasts and other users of this area.

However, the ACMA has said that they have identified the 403 - 430 MHz sub-band for exclusive government use, and will be transitioning other users out of that area over the next few years.

Up until the late 1990s, we had full access (on a Secondary basis) to the 420 - 430 MHz range. This was changed, initially due to security arrangements for the Sydney Olympics, and restrictions were placed on operation in certain frequency ranges within certain areas (NSW, ACT, Melbourne, Perth). This situation still stands.

What the latest ACMA proposal says is that the 420 - 430 MHz range will now be reserved exclusively for government use. So, goodbye amateurs. I think in the minds of many, we had already lost that segment. However, this proposal now sets the loss in concrete.

EVE

On March 25th, a group of German amateurs from AMSAT-DL achieved the first amateur planetary "bounce", receiving their own echoes back from Venus. They used the 20 m Bochum Observatory dish, transmitting 5 kW on 2.4 GHz (close to 1 Gigawatt ERP). The receiver used very long integration time and narrow bandwidth to pick the very weak reflections out of the noise after the 100 million km, five minute round trip. More details can be found on the AMSAT-DL site:

http://www.amsat-dl.org/pic/gallery2/d/7561-1/AMSAT-Venus-PM-E.pdf

See also the story elsewhere in this issue of AR.

John Moyle Field Day

After having magnificent weather and band conditions for the Summer VHF/UHF Field Day, the JMFD turned on the complete opposite conditions in the south of the country with the weather little short of appalling in some areas. I spent Saturday afternoon at the Bushfire Benefit Concert at the MCG, and I had first-hand experience of two deluges and extended periods of very ordinary conditions there!

However, the award for the worst experience (and a story that will no-doubt be retold for many years) would probably go to the VK2SMC group who set themselves up (or attempted to) at their usual site near Cabramurra in the Snowy Mountains.

Over to David VK2IDM:

"Apologies to all that were looking for contacts from VK2SMC but the weather unfortunately got the better of us this time.

The team (Rod VK2TWR, Glen VK2CCW, John VK2IJM and I) arrived at the site on Saturday and after setting up the sleeping tents and the equipment shelter we were unable to raise the tower and commence contacts due to a severe approaching electrical storm.

The brunt of the storm hit us just after 3:00 pm and it continued until about 5:30. The wind gusts were extreme and resulted in structural damage to the equipment shelter. The 20 mm of rain also infiltrated some of the sleeping tents and made the entire site very soggy.

After the weather cleared we set about drying off wet gear and making repairs to the equipment shelter and with sunset looming we also focused on getting the BBQ and dinner preparations under way, but still hoping to get on air as soon as we finished our much awaited dinner (steak, sausages, veggies and bottle of red wine).

However our hopes of getting on air were dashed again just after dinner when a second and even more severe storm front came through dumping well over 20 mm of rain (yet again) and with even more severe lightning strikes. This second front did not move out until after 10:00 pm but with more damage to the shelter and another drying out period we were unable to get on the air on any band.

We unanimously decided to put the kettle on, have a warm cuppa and then head off to bed. There was a moment of humour when a very close lightning strike hit just after Glen had retired into his tent, which resulted in Glen sprinting

100 m in his underwear to take safe refuge within his motor vehicle Faraday cage.

However, any thoughts of the weather eventually abating and allowing us a good night's sleep were dispelled when a powerful wind front hit shortly after 11:00 pm. The temperature also dropped from 11 degrees to just above zero and there were moments of sleety rain in the gales that followed. Glen's tunnel tent was ripped from its anchors and he spent an uncomfortable night battling to keep his tent on the mountain.

The next morning felt like mid winter with the thermometers barely above zero and a gale force SW wind blowing. We decided to let the gear dry and to decamp ASAP and to retreat to the warmth of much lower altitudes.

Yes, we took a battering and ultimately we were defeated but we will definitely be out there again next year to try it all again."

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

Congratulations to John VK4JMC and Bob ZL1RS on completing an FSK441 contact across the Tasman over a distance of 2193 km.

Welcome to Phil VK4FIL and John VK7XX who have been joining in the weekend 2 metre, meteor scatter activity sessions. John is also operational on 2 metres with JT65.

The use of GPS locked rigs and the waterfall audio analysis program, Spectrum Lab, provides the opportunity to examine the effects of propagation on signals at bandwidths of a few milliHertz and explore such issues as the frequency spreading on tropo-scatter. Figure 1 shows some initial results between Jim VK3II and Rex VK7MO on two metres over a 520 km path. The horizontal scale on the graphs spans around 0.2 Hz or 200 mHz and the width of the bins is 5 mHz. The left-hand graph was produced locally from separate GPS units. It shows some minor frequency drift of less than 5 mHz. A separate test between Jim and Dave VK3HZ showed similarly stable signals over a relatively short distance. The vertical scale is approximately 30 minutes.

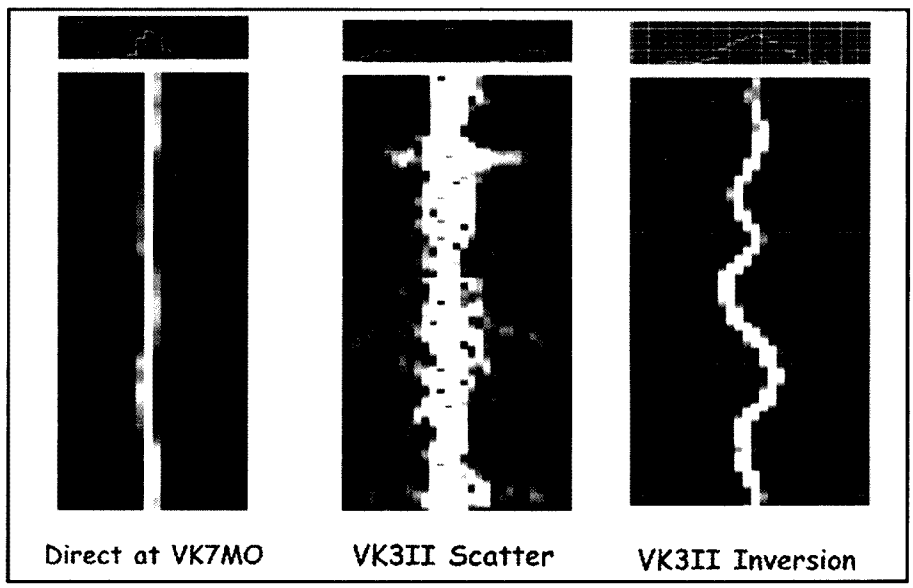


Figure 1: Shows Frequency effects on VHF signals

The centre graph shows broadening of the VHF signal presumably due to the multi-pathing effects of tropo-scatter. The spreading is surprisingly small and generally within around 50 mHz with the major excursions possibly due to micro-meteors. The right-hand graph was produced on a night where there was an inversion present and the slow, almost sine-wave, drift might be explained by the rising and falling of the inversion layer introducing Doppler shift. Later tests have shown a similar narrowing of the frequency spread during inversions but without the slow sine-wave variations. Also later tests have shown variations in the amount of spreading on a scatter path by a factor of four to one on different nights. While this is early days it appears that through the use of GPS locked rigs and very narrow bandwidth waterfall programs there are interesting opportunities for hams to explore various forms of propagation.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Conditions continued to be poor during March with no Es openings reported and very limited TEP openings to JA from northern Queensland.

Kevin VK4BKP reported hearing JA beacons on the 14th March.

The best opening for the month to Japan occurred on the 15th March with the opening extending south to VK5. Garry VK4ABW north of Townsville worked Kazu JA1RJU, Masa JA6TEW and Ken JA5FFJ. Kevin VK4BKP in Mackay also worked JA1RJU and reported hearing the JE7YNQ and JA1ZYK beacons. Meanwhile Brian VK5BC reported the 49.750 MHz carriers up to S9 and the JA6YBR beacon S4 and eventually around 0800UTC worked JA6TEW and JE6AZU. This was the first JA opening to Southern Australia since April 2007.

On the 17th March Ray VK4BLK in Yeppoon worked JG3LEB.

The Tablelands Radio and Electronics Club report that they have received approval for a 6 m beacon VK4RHT on 50.281 MHz to be located west of Mareeba in QH23pc. They hope to have the beacon operational shortly - look forward to hearing it.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com

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WANTED NSW

FT-902 in excellent condition, also accessories to make complete line up including speaker, vfo, tuner, transverter and FL-2100Z if available. Cash buyer. Thanks. Mike VK2OT guzziv10@bigpond.com

YAESU FT-101E/EE/F transceiver. Must be in very good to excellent cosmetic condition and preferably in working order. If you have one of these radios that you no longer need, please contact me. Gary Baxter VK2GAB, 02 9439 8845, garybaxter@aapt.net.au

REPAIRS needed to a Yaesu FT-101E, recieves OK, mic controls OK, everything seems to work OK but with no carrier wave. St George - Sutherland area Sydney. Contact Gary (02) 9583 1531 or newtome@bigpond.com

FOR SALE VIC

HUSTLER Super RM80S 80 m trap and ground plane to suit HUSTLER 4BTU trapped vertical antenna. If you have no room for an 80 m dipole, this trap with an ATU is an excellent option. More details, ask for Stan on 03 9743 6708. VK3BNJ $110 ono.

New aluminium tube. Most sizes of telescopic tube plus tube up to 70 mm diameter is available for antenna building and making masts. I also have other components like springs, heatshrink tubing, coils and traps, even antennas. It is worth a trip as I am finding bits as I look in boxes. Fitting and turning is also available. There are even parts for lawn mowers and motor bikes as I am having a big shack clean out. Items can be seen at Fact 9, 53-55 Sinclair Rd, Dandenong by appointment. Phone Brian on 0402 930 581. If you want any bits I may just have it.

Vintage SINGER GERTSCH FM-10C communications service monitor. Circa 1970 test set. Still a useful piece of test equipment. Powers up but not tested. Includes: FM10C Test set chassis, RFM-10A RF Module, FIM-1 frequency indication monitor, MDM-1 meter deviation monitor, product data bulletin "data sheet", FM-10C operator's manual, FM-10C maintenance manual, Two way radio servicing application note, 12 V option power cable. Operates from 240 V AC but appears to be able to run on 115 V AC as well. Also has 12 V option. Serial Number: 1199-050855. $750. Peter VK3DXD vk3dxd@gmail.com 0400 447 742

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HEATHKIT valve voltmeter mode V-7A, meter only or whole unit. VK3KO QTHR 03 9877 5938.

WANTED QLD

YAESU transceiver model FT-101ZD or FT-101Z with handbook, no lightning, water or smoke problems. Also AMECO model PT-3 preselector, handbook and circuit. Brad Booth VK4CDL, 48 Gregory St, Cardwell 4849, bradtimmy@hotmail.com

Antenna tuner able to work on 2 metre and 70 cm bands. Respond to b.doncliff@iinet.net.au

FOR SALE SA

VK5JST Antenna Analyser kits. (see AR article May 2006). Join the ranks of world-wide enthusiasts and build yourself an extremely useful item for your shack plus improve your HF antenna efficiency. For more details see www.scarc.org.au; contact SCARC PO Box 333 Morphett Vale SA 5162, or email: kits@scarc.org.auF

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http//www.mncarg.org/ or mncarg@yahoo.com.au

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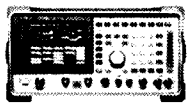
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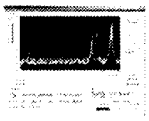
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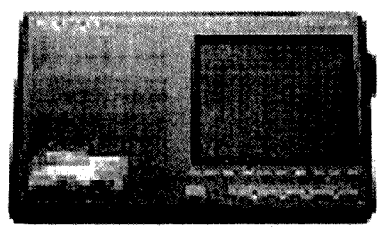
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Broadcast details

VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.130,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 438.075 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters. Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters. Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.
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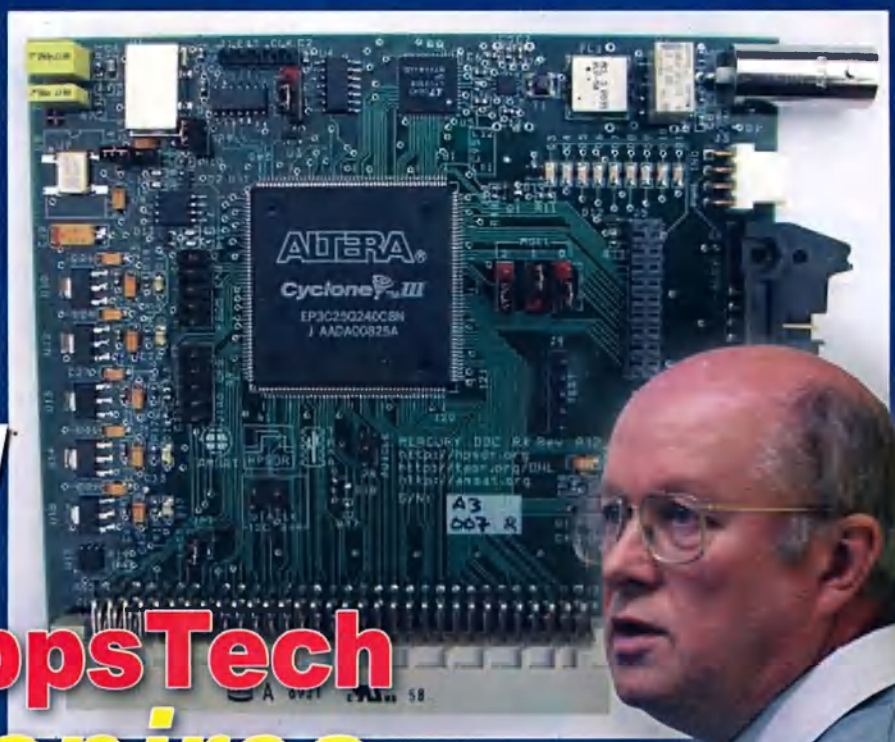
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Peter Freeman awarded G A Taylor Medal

Michael Owen VK3KI

The final award was the rarely presented G A Taylor medal. This award was first suggested back in 1981, finally being struck in Perth in 1988. The medal is presented in a wooden box, with the following inscription:

"The GA Taylor medal is presented in recognition of exceptional service to The Wireless Institute of Australia.

Major George Augustus Taylor was the founding Chairman of the Wireless Institute of New South Wales in 1910, out of which grew today's Wireless Institute of Australia. He was a pioneer in many ways; granted one of the first transmitting licences under the 1905 wireless telegraphy act (prior to 1908); he was among the first ten wireless experimenters to have been licensed by the PMG Department (1909); demonstrated that pictures could be sent by wireless (1910); transmitting the first military wireless signals in Australia (1911); conducted the first wireless communication between moving trains (1911); was the first to fire a gun by wireless (1913)"

In presenting the medal to Peter Freeman VK3KAI, WIA President Michael Owen VK3KI stressed that while Peter had contributed to amateur radio in many ways, in particular with the annual VHF/UHF oriented technical conference GippsTech conducted by the Eastern Zone Amateur Radio Club, it was his ongoing contribution as Editor of Amateur Radio and Chairman of the Publications Committee that was being honoured. Michael paid tribute to the quality of the magazine under Peter's direction, acknowledging the ongoing pressure of deadlines imposed on those producing the magazine.

In accepting the medal Peter expressed his surprise and gratitude, paying tribute to all of the Publication Committee members who worked for the success of the magazine.

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Our Cover this month

This month's cover shows Phil Harman VK6APH during his presentation on Software Defined Radio during the *GippsTech – Special Edition* as part of the AGM weekend of activities. Phil's presentation caused lots of discussion over the weekend. **Photo by Robert Broomhead VK3DN.**

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Founded 1910

Representing
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Member of the
International Amateur Radio Union

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Editorial

Peter Freeman VK3KAI

AGM weekend of activities

June is almost upon us, which means that another WIA Annual General Meeting has recently occurred. This year saw me deeply involved, as I was heavily involved in the organisation of the weekend. Not the least of this was the organisation of a Special Edition of our Club's annual GippsTech technical conference as a major part of the supporting activities for the weekend.

The GippsTech – Special Edition talks were part a "best of" and partly a deliberate departure from the usual focus, bringing in several speakers to talk about emerging topics which will certainly impact our hobby.

I thank all who were involved: fellow members involved in organising the weekend, all attendees – an event can only be a success if people attend – and importantly the presenters.

But enough of this – there are reports elsewhere in this issue which give an overview of the weekend, including one penned by myself.

One humble Editor

If you have not already heard, either via the WIA News broadcast or the WIA web site, I was very surprised at the AGM: the Board saw fit to "gong" me with the G.A. Taylor Medal. I was very surprised when Michael announced my name!

I take this opportunity to thank all who make my job as Editor a little easier, especially the members of the Publication Committee. Of course I must also thank all who contribute material to the magazine – without you, my job would be much easier – we would not have a magazine! Of particular note are the regular column contributors. But every article received is important in keeping the magazine going, and having an Australian focus.

And that comment brings me to my next comment:

Articles needed

Our stock of articles is running low. We have some still in review with the technical editors, but only a small number. The number ready for publication is at present very low.

Please seriously consider writing up your recent project or have someone write up your club activity for possible publication. I am aware that many amateurs provide information about their projects via the World Wide Web. But please do remember the printed word – it does provide for a more lasting record of our hobby, which may be of interest to others in the future, at times when web-based materials may have disappeared from even electronic archives.

And of course, the printed word is still a more flexible medium for reading text based material. Detailed guidelines are available on the AR pages of the WIA web site – simply look for AR magazine under the Members area.

Please send any images as separate image files, NOT embedded within your text file (Word is preferred).

Coming events

The coming Queen's Birthday weekend will see at least two amateur gatherings occurring, as far as I am aware. This brings up another possibility: if clubs could decide on their event dates earlier, it would allow for better planning for many amateurs, including myself as Editor. Whilst the WIA has an on-line calendar for club events, it appears that some only publish details quite late, if at all. You never know – someone might be planning to visit your area and be willing to modify their tentative plans to fit in your club activity.

Also consider participating in the Winter VHF/UHF Field Day, later in June.

The Queen's Birthday also marks the official start of the snow season and occurs shortly after the official commencement of winter. In southern regions, many think that VHF conditions will always be flat. However, many are often surprised – one must always be vigilant for enhanced conditions.

For me, work is getting to the busy end of the semester, which means that there will be many examination papers to mark in addition to tasks related to preparation for the second semester. It also means that the annual GippsTech event is coming up soon – on the weekend of 11 and 12 July. It is always a great event, so consider coming along. Everyone always learns something new during the conference, regardless of their existing knowledge. I hope to see many at the event.

Cheers,
Peter VK3KAI

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WIA comment

Michael Owen VK3KI

Callsigns - again

So far as the legislation is concerned, the callsign allocated to a station is no more than a condition of the licence for that station.

But a callsign is much more than that so far as a radio amateur is concerned. It is very personal, and the identification of an individual.

For many years the Australian regulator has recognised this, and has made special arrangements to manage the callsigns of deceased amateurs.

But merely failing to renew a licence may have serious implications in respect of a callsign, particularly if it is seen as a particularly desirable callsign, for example, there are today no two letter callsigns available in Victoria.

Yet every now and then someone fails to renew their licence in time, and so loses their callsign. That caused particular concern when, after the restructuring of the Australian amateur licences in October 2005, ACMA imposed an embargo on the issue of two letter callsigns, ultimately leading to the consideration of applications for the return of their callsign by people who could point to special circumstances, and then the ballot for two letter callsigns conducted by the WIA on behalf of ACMA.

Now, if someone fails to renew their licence, their callsign will appear on the list of available callsigns on the WIA website. They then have to apply for a new licence, and ACMA will tell them to obtain a Callsign Recommendation from the WIA.

My experience of talking to many people as a result of the embargo and since then in respect of licences that have not been renewed in time, persuades me that amateurs may fail to renew a licence for all sorts of reasons.

Sometimes it is illness, sometimes traumatic personal events, sometimes because ACMA fails to link a payment to a particular licence, sometimes because the renewal notice doesn't appear, sometimes because of travel and sometimes just because it was overlooked.

So what is the position? When can a licence be renewed?

The *Radiocommunications Act 1992* has a provision that addresses that matter. It is section 129 that provides:

> 129 Applications for renewal of apparatus licences
>
> (1) A licensee of an apparatus licence (other than a transmitter licence issued under section 101A, 102 or 102A or a non-foundation digital radio multiplex transmitter licence) may, at any time during the period beginning 6 months before the licence is due to expire and ending 60 days after it expires, apply in writing to the ACMA for the licence to be renewed.

The Act does not impose on ACMA an obligation to issue a renewal notice. ACMA does so, but failure to receive a renewal notice is no excuse for not renewing a licence.

But on the other hand, a licence can be renewed from 6 months before its expiry and up until 60 days after its expiry. Apart from the administrative arrangements for the renewal of licences there are other aspects that can be overlooked. Once a licence expires any continued operation of a station would therefore be un-licensed operation and the licensee may be the subject of regulatory action. Further, if for example you enter a contest or gain that long awaited DX contact while technically un-licensed, any claims would be rendered void.

We know how important callsigns are.

The WIA has put a brief summary of the licensing process on its website, as we know that many people are confused in this area.

We also know that the service that the WIA is providing of specifying the available callsigns (up dated daily from data provided by ACMA) provides much more information than was previously available from the ACMA Register of Radiocommunication Licences on the ACMA website. The ACMA Register certainly does identify the callsigns that are currently allocated, but the fact that a callsign does not appear in Register does not mean that callsign is available. For example, a callsign will not appear if it is the callsign of a deceased amateur during the period that callsign is embargoed without the approval of the next of kin of the deceased amateur.

Quite apart from the failure to renew a licence as I have discussed above, what about the situation where through human error a callsign is treated as cancelled, a situation where the licensee cannot be reasonably expected to have any knowledge at all?

All of this has led us to a very real awareness of what can arise.

That is why I am particularly drawing attention to the Act itself. If you are going overseas, and you are within the period of 6 months before your licence expires, why not renew your licence before you go? You don't have to wait until you receive a renewal notice from ACMA.

It is also why the WIA will not make a Callsign Recommendation until 7 full working days have elapsed after a callsign is first placed on the list of available callsigns on the WIA website.

We hope that in that time someone will notice a callsign that looks like it could be wrongly on the list. We hope that in that case the real "owner" will be told. Then, if it is "your" callsign, on the list for whatever reason, and if you immediately contact the WIA within the 7 working day period you will be able to recover "your" callsign.

The long period before, and indeed the period after expiry, during which a licence can be renewed may not be generally known, but it certainly does provide the opportunity for reasonable flexibility.

We know how important callsigns are.

If you want to keep yours, then renewing your licence in time is essential. As someone said to me the other day, he did not really want to have to pay the WIA for a Callsign Recommendation just to get his own callsign back!

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WIA News

2009 WIA AGM and Open Forum

The WIA's 2009 Annual General Meeting and Open Forum were held at the Gippsland Campus of Monash University at Churchill on 2nd May 2009.

The AGM/Open Forum was held in conjunction with a range of activities built around the highly successful annual conference conducted by the Eastern Zone Amateur Radio Club every July, GippsTech, as GippsTech – Special Edition.

The Annual General Meeting honoured 42 WIA members who had become Silent Keys in the year since the previous AGM, but otherwise was very much a formality. The Open Forum following the AGM was the opportunity for members to learn, question and comment.

The Open Forum commenced with the presentation or announcement of a number of awards, as reported elsewhere in this issue, and then some 23 reports on various WIA activities were presented.

The President reported mainly good news, the total number of amateurs continued to grow, and the WIA's membership also continued to grow.

The following, taken from the President's Report, shows the total number of amateur licences on issue annually since 30 June 2001.

Total Amateur Licences by year

30 June 2001	15,017
30 June 2002	14,536
30 June 2003	14,363
30 June 2004	14,047
30 June 2005	14,041
30 June 2006	14,475
30 June 2007	15,009
30 June 2008	15,278
1 April 2009	15,510

The 30 June counts are taken from the ACA/ACMA Annual Reports, and the 1 April 2009 count is from the ACMA CD of Australian apparatus licences.

The break-up of the 15,510 amateur licensees as at 1 April 2009 is as follows:

Licences by Type

Advanced	11,231
Standard	2,019
Foundation	1,818
Repeater/beacon	442

WIA membership has also grown. The President's Report had the following statistics:

WIA Total Membership

31 December 2004	3,494
31 December 2005	3,851
31 December 2006	4,114
31 December 2007	4,302
31 December 2008	4,376
20 April 2009	4,581

Membership continues to grow, but not all that evenly!

During the Open Forum it was announced that particular emphasis would be placed by the Board on emergency communications during the forthcoming year, with three directors led by Phil Wait as Coordinator taking direct responsibility for this activity.

WIA RTO Fred Swainston has been asked to formulate a nationally recognised competency relevant to the provision of emergency services, so that amateurs may be nationally accredited.

The WIA website continues to attract users. Webmaster Robert Broomhead VK3DN's Report to the Open Forum disclosed the following:

In the last twelve months the website has had nine and a half million hits.

During the same period the site has served out 992 gigabytes of data, almost 1 terabyte. (Note: this does not include the weekly broadcast mp3 files)

1116 people have filled out the "contact the WIA form".

475 people signed up as members through the website.

There have been over 16,000 lookups of the available callsign database.

Each week we average 500 downloads of the weekly news broadcast files with the 128 kB version being the most popular.

There is an average of 300 downloads per month of the Foundation licence training slides with some months downloads hitting as high as 1200.

The weekend was judged a success by those participating, who now look forward to the special events of next year, the 100th anniversary of the WIA and its antecedents.

WIA appoints Treasurer

The Board has appointed John Longayroux VK3PZ WIA Treasurer with effect from 12 May 2009. John has held a licence for over 35 years, recently retiring after 32 years with the Australian Taxation Office.

He has recently been involved in assisting the Melbourne club, the Eastern and Mountain District Radio Club.

Board reappoint President and Vice President

At its meeting following the AGM, the WIA Board re-appointed Michael Owen VK3KI as President and Ewan McLeod VK4ERM Vice President for the forthcoming year.

ACMA Newsletter features WIA Contract

The April edition of ACMA newsletter ACMAsphere features a story on the new contractual arrangements between the WIA and the ACMA for the provision of amateur examinations, certificate of proficiency issue, and the administration arrangements for the management of call signs.

WIA President Michael Owen and WIA Directors Peter Young and Robert Broomhead were present at the signing of the contract with ACMA Chairman Chris Chapman on 27 February 2009. Other matters discussed at the meeting, were general spectrum management issues and the role amateurs can play in times of emergencies.

Assessments Conducted

For the period 1 April 2008 to 31 March 2009 the following assessments were undertaken:

Foundation	619
Standard and Advanced	389

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The Alligator Hat

Andrew Davis VK1DA

A simple, no-solder solution to an antenna problem

When operating portable from my car on the 3.5 and 7 MHz bands in the RD contest, I found that my helical whips were tuned to the SSB section of the band and presented too high an impedance at the CW end. The high impedance caused the radio to reduce its output power significantly. This is a common problem with HF helicals, as they can have very narrow SWR-bandwidth, especially on the lower frequency bands.

I do not use an ATU for my HF antennas, so I needed a way to lower the resonant frequency of each whip, temporarily, to allow my IC-706 to produce normal power into the mobile antenna.

In my field radio case, I found a suitable piece of wire in the form of an alligator clip lead. I knotted this onto the helical whip (see Photo) and checked the SWR curve across the 7.0 to 7.08 MHz region using the IC-706 plotting function.

With the lead located close to the base of the antenna there was no effect on the resonant frequency. Moving it up a bit started to make a difference. Finally I found a point where the SWR was nicely low right where I wanted it, at about 7.015 MHz. I was then able to operate at normal power levels in the CW part of the band.

On the 3.5 MHz band, the whip's resonant frequency was about 3.585 MHz and the SWR was quite high at the CW end of the band. Again the clip lead was moved up the antenna until its resonance had been moved down to 3.520 MHz and the SWR was quite low. It took less time to do this than to describe it. The antenna was now presenting an acceptable impedance to the radio which then produced normal power on the CW end of the band.

The wire was increasing the capacitance of the antenna to the car body, and thereby changing its resonant frequency. The neat thing about this method was that my antennas remain undamaged and are still resonant on their original frequency, but any time I need to operate on the CW end of the band, I can use this handy method to lower their frequency temporarily.

Others may find this a handy way to lower the centre frequency of an HF helical without changing its normal tuning. There would be many other ways to achieve this effect including a metal clip with attached wires. If some such capacity 'hat' was attached to the top of the helical, the effect on resonant frequency would be more marked and a smaller 'hat' would be required. A few minutes experimentation would find the right size and orientation of wires to achieve the resonant frequency sought.

The alligator clips are incidental to this solution, of course. An ordinary piece of wire would have been just as effective.

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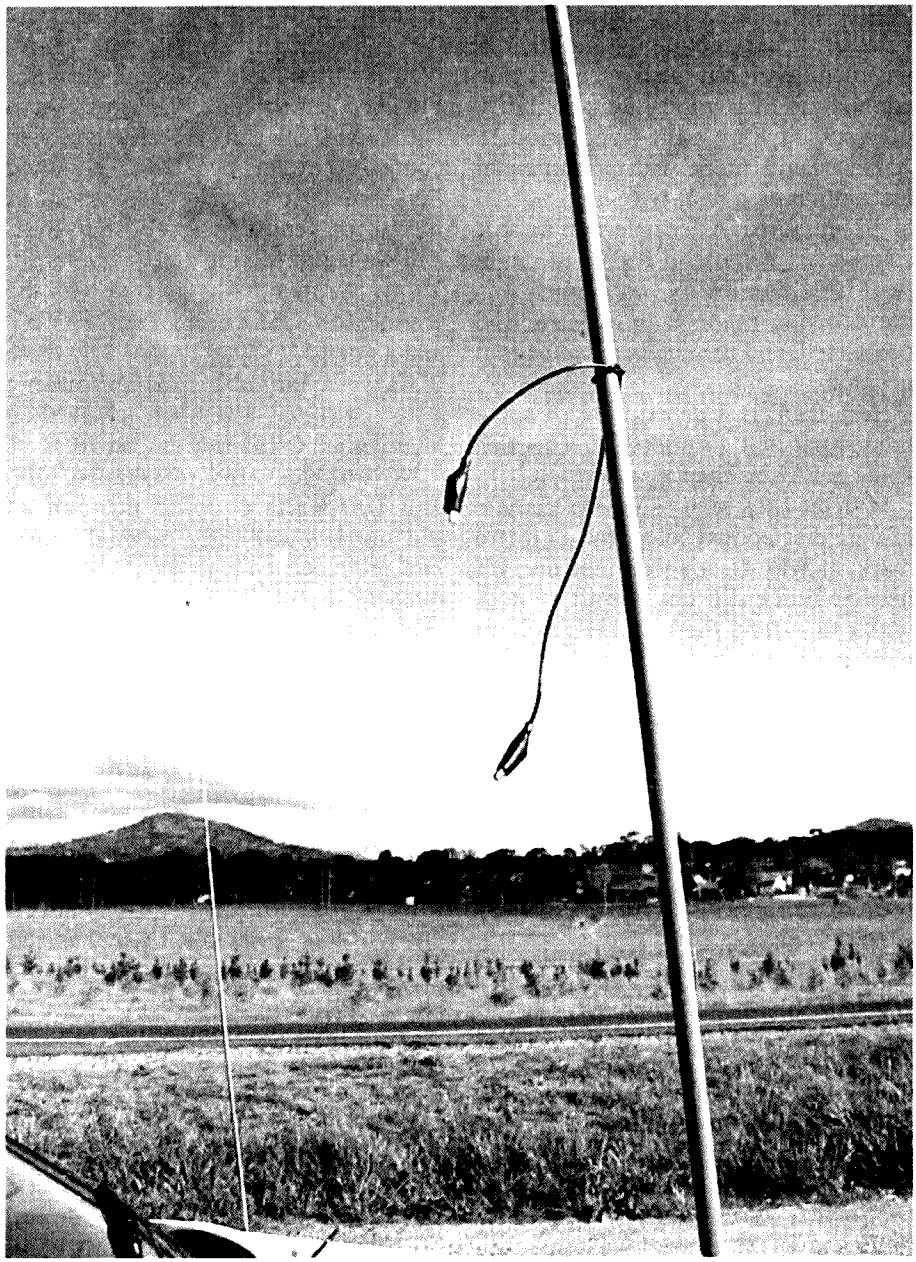


Photo 1: Alligator clip lead knotted around helical whip. (Photo by author)

My high performance multiband Delta Loop

Wayne Pickard VK2ACY

While I take no credit for these discoveries, it is hoped that the information herein will be useful for others, in their own quest, to arrive at the most suitable HF antennas within the limitations of their own location.

Further to my earlier exploits (and successes with my G5RV and homebrewed dedicated coupler unit), the need to arrive at a suitable HF antenna for working long-haul DX still remained unaddressed for some time.

As the local geography and nearby obstructions all but ruled out short path contacts with Europe, the possibility of working long path was seriously advanced up a 'notch' with the successful installation of a haul-wire atop our 20 metre gum tree. After determining that a full-sized delta loop for 40 m might then be a possibility, no sooner was the decision made than construction completed, and the antenna hauled into position.

Here then, is a description of some interesting and surprising discoveries made purely by chance, as a result.

With the apex of my 43 metre triangle of wire erected just below the 20 metre mark, it was discovered that my 1/7 hectare block did not permit enough width to extend the triangle's bottom corners adequately to achieve anything even close to an equilateral triangle arrangement. Somehow sensing that all might not necessarily be lost, I proceeded to guy off the corners and feedline which created an installation along the following lines:

43 metre (apex - up) delta loop: in the form of an elongated (tall and skinny) shaped triangular loop (17 + 17 + 9 m), fed close to one of the bottom corners approximately 1.5 m up the nearest vertical side with approximately 6 metres of 300 ohm solid TV ribbon. The plane of the loop was also sloped at an angle of about 30 degrees away from the supporting gum tree.

This configuration placed the bottom (horizontal wire) side of the antenna furthest from the trunk of the supporting tree, and about 1.5 metres above the tiled roofline of the house (antenna broadside directly facing long-path Europe).

While this was recognized as being somewhat less than ideal, curiosity got the better of me. After making a hasty telephone call to a local amateur who was due to keep a daily long-path 'sched' with his friend located in the beautiful French countryside, I tuned in on 40 m and waited. Once my presence had been confirmed by the local VK, who asked his scheduled contact to standby, I called him accompanied by a very short over, and waited expecting a negative result. To my surprise I was greeted with the warmest of QSLs from Tony F5VBY and a good 5/7 signal report!!! So there it was, maybe not a 'pile-up' busting outgoing signal, and albeit achieved on a very good QRM-free day on 40.

Nevertheless, my misshaped loop and 100 watts coupled through an old unbalanced fully manual tuner, had produced enough very low-angle radiation to pull a 5/7 from sunny France! Buoyed by this success I gave my thanks and goodbyes, QSYed and immediately worked Spain, Italy, and Sweden in quick succession. A reasonable half-hour's work for my first afternoon working 40 m long-path, I thought!

It naturally followed that even better results must be achievable with a 'properly installed' delta loop. Therefore, totally abandoning the 'leave well enough alone' principle, I found myself attempting to guy the loop's bottom corners off 'borrowed' supports located on my neighbours' properties in order to achieve the 'perfect equilateral delta loop antenna'.

Four successive attempts later, and a badly injured left knee saw the realization of my quest, and at least a month's recuperation on light duties. To my dismay over the following weeks, during conditions which varied anywhere between excellent to poor, subsequent contacts were nowhere near as forthcoming as with the previous arrangement. It was now more than clear that the perfect looking antenna was not quite so well disposed in terms of performance.

To top it off, a sudden wind storm brought down the branch supporting my haul-rope and the whole antenna with it. I was later to learn that this was to be a blessing in disguise.

Unable to go any further with all of this due to my previously acquired injuries, I was fortunate again to get the necessary help, and a high-strength stainless steel line and pulley was installed and the antenna re-erected, this time in the original 'tall and skinny' format. Immediately over the course of that afternoon, with the antenna fed exactly as previously, good long-path contacts were made into Italy, Spain, and The Netherlands – a feat which was not anywhere as readily achievable over the several weeks previously operating with the supposedly 'ideal equilateral triangle'.

So, faced with the apparent discrepancy between theoretical 'textbook behaviours' and practically realized realities, I resolved that in this instance, both the closer proximity to the RF absorbing foliage on the tree, and the increased angle to the primary reflective boundary (that is, the tree's trunk) were significant factors in terms of affecting this antenna's low-angle performance.

In short, the antenna as it was originally and now (re)installed, was tending to assume more of the properties of a 'sloper' antenna, which are renowned for their long-haul DX performance.

But that was just the beginning of what I was to discover about my particular delta loop arrangement over the subsequent weeks.

Care and Feeding

'My Balancing Act'

When arbitrarily fed with a total of 16.5 metres of 300 ohm solid TV ribbon, coupled into a 200 ohm balanced 4:1 balun transformer, the antenna produced a measured SWR of better than 1.5 to 1 across not only the entire 40 m band, but also 20 m and, wait for it, 15 m as well! How fortuitous, not to mention useful.

However, what exhaustive on-air testing revealed was that the varying properties resulting from operating this particular antenna on these bands in this way can be effectively used to advantage in some circumstances.

40 m: Expected angle of radiation should be quite low as anticipated, however as the delta loop antenna is not generally regarded as a 'balanced' antenna, feeding this way seems (at times) to produce a slightly differing radiation angle performance to the 'unbalanced' method (see more on this below).

20 m: On this band the antenna is believed by some to operate in similar manner to a pair of collinear verticals fed in a fixed phase relationship. Therefore radiation angle is mostly higher (as evidenced by 5/6 to 5/7 contacts easily workable within VK only, which were not even detectable using other horizontal and vertical antennas available.) Some good, moderately low angle performance was also apparent, as contacts were achievable extending out to Pacific Rim countries (which were not workable on the other antennas).

15 m: As for 20 m above, however as the radiation angle appears as being somewhat higher (with the absence of any moderately low angle take-off) short-haul DX less likely even within the Pacific region, but inter-VK contacts often remarkably good.

Well, unexpectedly, the above is just what the doctor ordered for my location as exploiting these properties particularly on 20 and 15 metres has given this station the ability to often make remarkable contacts for longer periods than would otherwise be possible in the absence of the traditional high-mounted beam and rotator arrangement.

Noteworthy is the fact that 16.5 metres of 300 ohm closed TV ribbon feeder (allowing for the 0.82 velocity factor) is a half, full, and one and a half wavelength on 40, 20 and 15 metres respectively, resulting in minimal effective impedance transformation from the loop's presenting load impedance. Total length of the RG-58 coax run from the 4:1 balun to station's operating position was 7.5 metres.

'Going unBALUNced'

The originally envisaged method of feeding allowed for a six metre length of 300 ohm ribbon connected directly to an unbalanced ATU ('earthy' side of ATU output connected to horizontal side of loop).

The ATU was positioned directly below the feeder's point of attachment to the loop. A run of some 20 metres of RG-58 coax then proceeded from the ATU to the shack's operating position. As the loop's presenting impedance was anticipated to be approximately 100 and 200 ohms on 40 and 20 metres respectively, no difficulties were encountered in achieving a match to 50 ohms, even allowing for the significant impedance transformation created by the (almost) eighth – wavelength (six metre) run of ribbon feeder, while operating on 40 metres.

Tuned bandwidth on both 40 and 20 metres was broad enough so as not to require retuning when moving up and down both these bands. During exhaustive comparison tests, notable differences were apparent, which prompted the temporary installation of a (feedline and coax) remote switching arrangement, yielding the following reproducible observations:

40 m: On this band my delta loop is used solely for working European stations long-path (and occasionally ZL which is conveniently located in the approximate broadside direction.) Over the course of numerous trans-global contacts particularly during periods of 'borderline' band conditions, switching between the 200 ohm balun-fed configuration, and the tuner as described had noticeable effects on whether some stations could hear me at all.

As this phenomenon started assuming the appearance of a 50/50 scenario, this ruled-out the possible effects of tuner or feedline losses as possible causes. This then led me to consider the effects of things like phase shift in tuner inductors and the like upon the all important current distribution along the length of the delta loop, and subsequent angles of maximum radiation.

What further complicated my attempts to make sense of this, was working a station in Italy with the tuner's hot/cold connections to my loop accidentally reversed, and his then reporting that he could not hear me once I had corrected the oversight. Connections reversed again, we continued the QSO! Understandably, the switching unit was retained, for the time being, with the addition of a 'feeder-flip' switch as well.

20 m: While enjoying the previously described benefits of this antenna during inter-VK (net) contacts on 20 m, it was found that those stations which were at least one good 'hop' further away were often reporting significantly stronger signals from the delta loop when operated in '200 ohm balanced feed' mode. Needless to say, the differences in propagation angle to these contacts and/or directional differences have not been overlooked, and the ability to remotely select between feeder arrangements has opened up the possibility of comfortably enjoying otherwise unworkable contacts.

15 m: During the infrequent openings on 15 m, somewhat similar results were obtained as on 20 m, however the angle of radiation would seem to be significantly higher regardless of feeding method employed. Nevertheless, the ability to remotely change feed arrangements has led to numerous contacts being 'saved' from premature termination due to changing band conditions.

'Tuning Up'

Where opportunities for installing multiple HF antenna systems are limited, the ability to exploit the inherent properties of existing antennas and resources can often present creative solutions (for example, operating a centre-fed dipole as a 'Top-Loaded Tee' on 160 m, or shunt-feeding a tower). This fact has not been overlooked with my 43 metre wire delta loop which has also been operated as an end-fed wire on the following bands:

160 m: By connecting the normally 'hot' wire from the loop (via the six metres of ribbon) to the unbalanced ATU, this presented as close to a quarter wavelength on 160 m (that is, 'linear-loaded'). When worked

against a short piece of wire connected to an adjacent water pipe earth, this resulted in sometimes greatly improved communications with local (<50 km) groundwave contacts (compared to my normal trap-loaded 160 m inverted V, the apex of which was less than half the height of the top of the wire loop.)

80 m: Similar setup and results to 160 m above, however operating as close to a five-eighth wavelength on this band. This is perhaps the band on which this method works best, however, my normal G5RV seldom has any problems in enabling me to keep in touch with the really local 'locals' on 80 m.

40 m: Operating as close to one and a quarter wavelength on this band, the resulting radiation angle is quite high, negating the benefits afforded the really 'local' contacts on the above two bands. However, as a stand-by antenna for inter-VK and ZL contacts, it does not seem to do a bad job really.

The benefits gained from being able to use this antenna as an end-fed (linear loaded) wire were eventually found to be so useful that a dedicated 'jumper-wire' tuner was constructed on a sheet of timber using all junkbox parts. Positioned on the lid of a plastic garbage bin and utilizing fixed inductor/capacitor settings which fully covered each band, an SWR of better than 1.5 to 1 was maintained at all times. The ability to quickly switch between my G5RV, multi-band Stationmaster vertical, and the newly commissioned end-fed loop, has done a great deal to ensure I can maintain local VK/ZL contacts under varying conditions. When the long-haul DX is not around, that is.

And ... the previously mentioned feed-method 'switch box' still remains in place, enabling me to exploit the whole repertoire of behaviours of this single piece of wire.

So that is it. One piece of wire, and multiple uses and benefits would seem to be the unexpected but pleasantly surprising outcome of this exercise. And yes, the knee is healing well despite my earlier fears to the contrary.

While I could not count the number of times it has been suggested to me to simply 'put up a tower and beam and be done with it' I would gladly do so in an instant! However, if you are in a similar situation as myself, you will already know that this is not possible at all QTHs.

For us, the possibility of gaining that 'leg up', be it for local or distance contacts, without having to relocate (or else buy and demolish all the neighbouring infrastructure) is a definite WIN to say the least.

PS: Many thanks to all those stations who gladly and patiently participated in my on-air tests over an extended period. Thanks also to Trevor VK2COE, without whose advice and practical skills none of the resulting outcomes would have been realised.

Also, what I did not realize at the time was that my very first contact using my new delta loop was with the very person who happened to be responsible for its initial development and testing on the lower bands during the late 1960s – namely, Tony F5VBY, known then by his former callsign G3TZH. As we say here Downunder: 'Thanks heaps, mate!'

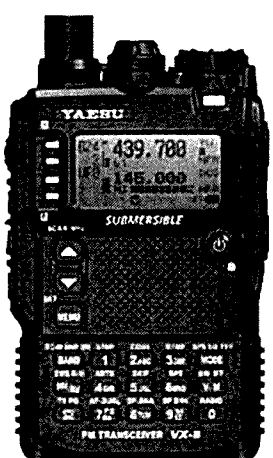
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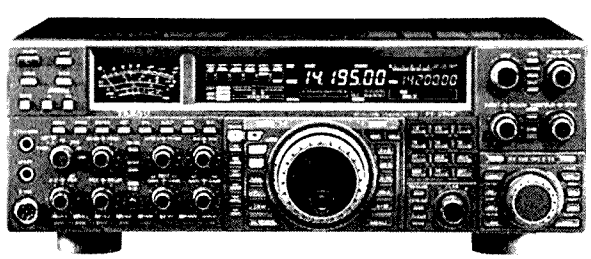
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Flyaway unit on 10 GHz or adventures on mountaintops

Jack Swart VK2TRF

In my job as a professional cameraman, I get to travel to a different destination somewhere in Australia each and every month. Before each shoot, I decide what radio hardware I will take to suit the destination.

Mostly I take an Icom IC-7000 to operate HF, VHF and UHF. More about these adventures will be revealed in an upcoming article.

When I received the schedule for the trip to Victoria in January 2009, I realised that there would be several opportunities to go looking for mountaintops for future microwave operations. Whilst checking topographic maps, I soon discovered that I would be well in range of Melbourne and Geelong, two hot spots for 3 cm operations.

After firing off a couple of emails, it became clear that quite a few VK3 stations would be willing to have a crack at a portable VK2 station in their own backyard.

Having to fly to almost all filming locations meant keeping weight and volume to a minimum, so the normal sized dishes, tripods, battery packs and spare gear all had to be left behind.

Searching through the junk box (otherwise known as the entire garage) I found a 20 cm (8 inch) dish from an old security system, complete with a split dipole feed for 3 cm. Since I always use a tripod for filming, an adaptor to hold the dish and transverter seemed the best way to go.

As I love multi tasking equipment, I used a lighting clamp to attach the system to the tripod. The five watt transverter is quite small, so the dish was attached directly to it and the tripod. The interior shot of the transverter shows the basic 200 mW unit, the PA, the sequencer, isolators and 12 V T/R relay. The extra connector on the side of the transverter is the 10 MHz reference input. Refer photo 1.

The usual FT-290 was pressed into service as the IF rig and the IC-7000 as the liaison radio. The 2 m window antenna mount could rapidly be changed from vertical to horizontal polarisation for FM or SSB.

The final piece to the puzzle was the newly acquired GPS locked 10 MHz oscillator which simply connects to the transverter and locks the LO extremely accurately. All power for the system is 12 V from the vehicle battery.

Normally my laptop containing topographic maps and GPS receiver is an integral part of mountain-topping, but it was just too big and heavy. Paper maps had to be used instead.

QSYing on 3 cm, I can tell you, is completely outside my experience!

All the equipment fitted in a sturdy aluminium shipping case designed for camera equipment. This had the advantage of looking like camera gear at airline check-in, avoiding any questions about the weird looking stuff inside.

Upon arrival at the first location, Anderson Hill near Loch, I put out a call on 144.100 and was almost overwhelmed by the number of responses. On 10368.100 the number of stations was such that several had to QSY to avoid interference. QSYing on 3 cm, I can tell you, is completely outside my experience!

For three hours, my mobile phone, 2 m rig and 3 cm system were going absolutely flat stick. I tried to record contacts into my log but the traffic was so busy that I have had to rely on reports from the stations I worked, to complete the data. At the end of the day, nine stations were worked. I think this is more 3 cm stations than exist in VK2!

The small dish and five watt Kuhne transverter and GPSDO worked flawlessly and made operating an

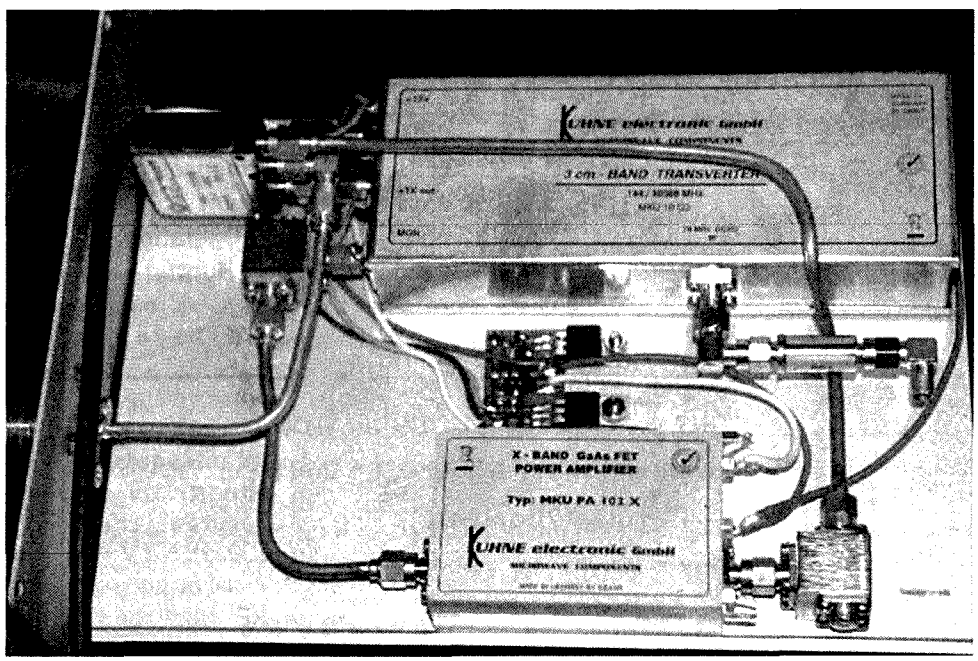


Photo 1: The VK2TRF transverter.

absolute pleasure. The unit was very sensitive and five watts output certainly makes oneself heard.

The second outing, on top of Mt Tassie was a little less hectic. I managed to work three stations on 10368.100 FM. The interesting part was that two of them were at right angles to the dish so I was able to have a three way QSO on 3 cm without any panning. Another first for this VK2.

Thanks to VK3QM, VK3PY, VK3NX, VK3TU, VK3NW, VK3NJP, VK3ALB, VK3XPD, VK3WRE, VK3YDK and VK3KAI et al.

If I have inadvertently left you out of the log, please email me and I will correct the situation.

All in all, I had a fantastic time while portable in VK3 and thanks to all those stations that participated. It just goes to show that you do not have to lug large dishes and complex gear around to enjoy 3 cm.

ar



Photo 2: The VK2TRF portable 10 GHz station, at the Mt Tassie northern site.

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Queensland's youngest Foundation Licensee: Nicholas O'Sullivan VK4FNIC

Shaun O'Sullivan VK4FY and the O'Sullivan family

This Foundation licencee is only a handful of years older than the Foundation Licence system itself.

The recently introduced three tier licensing structure has increased the number of amateur radio operators enjoying the hobby. The Foundation (entry level) qualification has proved to be extremely well received and popular. Amateur radio has a big appeal with all ages, especially with the younger generation. I myself first entered the hobby as a Foundation operator and proceeded to do the additional study and eventually proceeded to a full call (top level) qualification.

My children were curious about Dad's new hobby, and often wondered why he was stomping around on the roof, erecting these strange bits of wires and metal in the trees and surroundings. Son Nicholas showed a great deal of interest and enjoyed the occasional QSO (contact with another operator) especially if they were young, and thoroughly enjoyed Redcliffe Radio Club (RRC) family camping weekends, such as for the recent John Moyle Memorial contest.

My wife Jeanette and I discussed the requirements to get Nicholas on the air. Nicholas decided to study and sit his Foundation Licence. His Mum, being a teacher, helped Nicholas to study the material. She created a number of little info cards that were used for memory joggers and revision. Face-to-face practice also helped Nicholas to practise his on-air procedure. For a nine year old it was a major undertaking and an ambitious goal to achieve, to be one of the youngest to get a licence.

The family had planned to participate with the RRC in the John Moyle Memorial contest weekend at Murrenbong scout camp site. It is always a great weekend, out bush camping and contesting and was an ideal time for Nicholas to attempt the written and oral exams for the Foundation license. When Jeanette prepared and set out the study program she also decided to sit the exams as well. (If you can't beat them, join them and enjoy it).

The day arrived for Nicholas and Jeanette to sit for their Foundation licence exams. Poor old Dad was doubly nervous and worried for both of them. The wait for the Assessors to mark and review the Foundation examination papers seem to take forever.

Nicholas was called over and given his result, a pass, and jumped into the air with a mighty 'YES!' for the world to hear. His mother also passed her exams as well (perhaps we may hear a VK4FWWW on air quite soon?). Next was the practical portion of the assessment. Nicholas had studied and practised for this at home, working through the setup of Dad's HF equipment. He breezed through most of the practical, but there were a couple of tricky areas that saw him have to study overnight and retry on the Sunday. Finally these last areas were easily completed and Nicholas had achieved his goal.

You can now hear him on the repeater in the afternoons after school as VK4FNIC, enjoying a chat.

The local TV Station also took an interest in Nicholas, as the youngest amateur in Queensland and one of the youngest in Australia. He appeared on Brisbane Extra on 30 March with Peter VK4TAA, the secretary of the RRC, and of course his proud parents.

Amateur radio is an excellent hobby for everyone as there are very strict controls and monitoring of on air activity so there is no bad language or anti social behaviour towards any operator, only encouragement to achieve your goals.

None of this would be possible without the family spirit of the RRC and the help of a number of club members, especially the examination team - Alan, Ces, Peter, Chris and to David, Peter VK4TAA and Peter VK4EA for taking the time to participate in the TV segment!

ar



Nicholas celebrates passing his Foundation Licence assessment, and becoming VK4FNIC, together with Cec Kenny VK4CF, left, and Peter Schrader VK4EA, on the right.

Over to you

Dear Editor,
I have read with interest the debate regarding promoting amateur radio into the wider community.

I think that an area that is also worthy of consideration is the group of prospective retirees and those who have already retired. I am of that age where retirement is approaching and I have only fairly recently become a licensed amateur operator, although I have been interested in radio for many years.

My career has been in a technical field involving many differing aspects of problem solving and project management. The job also provides an important social aspect to life. I felt that, when I retired I would lose many of the interesting technical and social attributes of the working environment and that amateur radio would fill part of the gap.

Although I am still working, the benefits of being involved in this incredibly diverse hobby are exceeding my expectations in the aforementioned areas.

I think that there must be tens of thousands of people in our society who have similar concerns to myself regarding retirement. I can imagine that a substantial proportion of prospective retirees are searching, as I am, for ways to maintain an input into technical challenges to keep the mind ticking over and to network socially amongst like-minded people after leaving the work environment.

This age-group of people could bring a considerably varied experience to amateur radio, as many do already, and in turn amateur radio would provide them with an important socio-technical aspect to their retirement.

The challenge for us, of course, is how do we promote amateur radio?

73 Chris Simkin VK2VGA

ar

Errata May AR

Circuit diagram error – AM detector

Regarding my AM detector article in the May issue of AR (page 11).

On perusing the circuit diagram I have noticed one error in the value of the RF stage FET 'source' resistor. On the diagram it is shown as 1.8 kohms. The correct value is actually 560 ohms.

As I have lost my original material sent to AR, I cannot recall if I was at fault but in any case the correct value is 560 ohms. The RF stage may still function with 1.8 kohms but not very well, I would expect.

Regards, Felix Scerri VK4FUQ

Magnetic loop antenna

There is a minor typesetting error that sneaked into the published article: the third paragraph under the section heading "Receiving properties" should read "....the magnitude of the electric vector is 120π Ohms or 26 dB greater...." (i.e. there is a missing Pi symbol between the 120 and the Ω).

Regards, Leigh Turner VK5KLT

Off centre Fed dipole (OCF)

Apologies to Ron Cook VK3AFW for failing to notice that his surname was missing from his contribution and also the Table of Contents.

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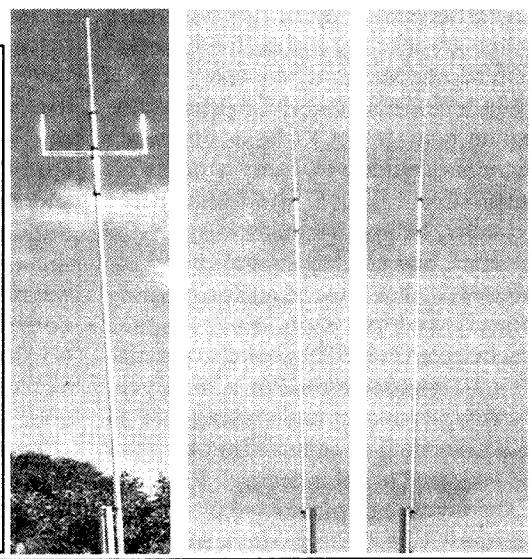
The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

New

Tet-Emtron Vertical Range

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Antenna	TEV-4	TEV-3	TEV-3 Warc
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ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

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A simple sensitive power meter

Paul McMahon VK3DIP

A power meter that can work at and below the mW range is a very useful tool for the radio amateur; this is one of the reasons why so many designs for them have been published. The version presented here has much in common with earlier designs with its main distinction being that it should be relatively easy and quick to build because it utilizes a pre-built module for the main PCB. It also makes the ideal detector for use with a Return Loss Bridge as it already reads directly in dB.

Rough Specifications

10 – 500 MHz, 80 dB measurement range, down to approximately -70 dBm (with offset calibration). Still usable up to approximately 1 GHz, with sensitivity and range decreasing to about -50 dBm and 50 dB respectively.
Measurement in tenths of a dB with variable offset on LCD.
Raw measurements sent via serial data to a PC for data capture.

Background and Design

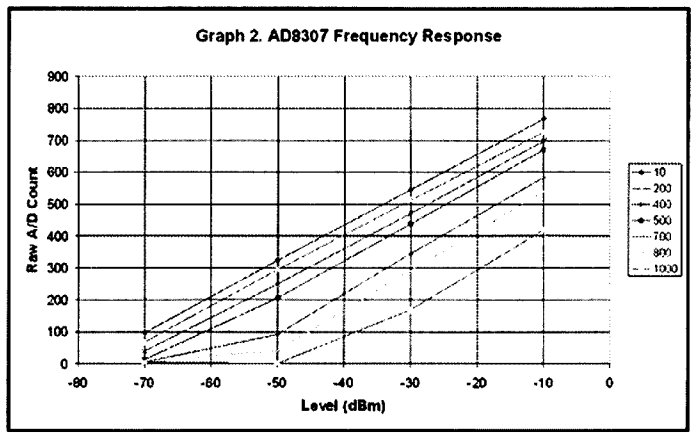
Like many of the recently published designs for power meters, the RF bit of this one utilizes the AD8307 chip from Analog Devices. See References 2 through 6 for examples. In my prototype this IC, with very little else, produced the results shown in Graph 1.

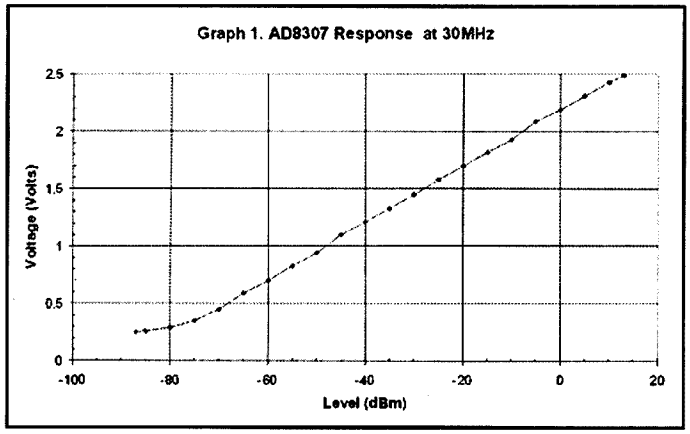
This graph shows the DC voltage obtained out of the IC versus the input power level (in dB mW or dBm) at a frequency of 30 MHz into 50 Ohms. This curve more or less replicates the data given in the AD8307 data sheet (Reference 1) showing basically a linear response from roughly -70 dBm up to about +10 dBm. For reference -70 dBm equates to about 100 pW or 70 uV at 50 Ohms, +10 dBm equates to about 10 mW or 0.7 V at 50 Ohms. This is perhaps more easily understood if we consider this dynamic range with a suitably rated 50 dB attenuator in front. In this case we would get a range of approximately -20 dBm (0.01 mW) to +60 dBm (1 kW!).

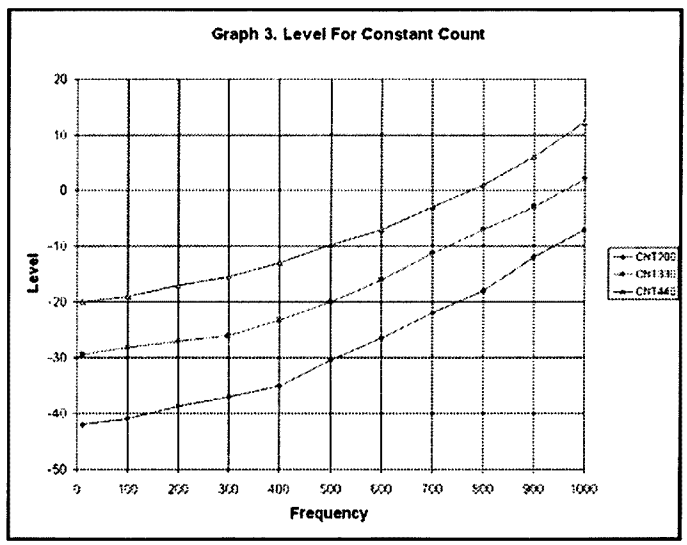
The measured slope of the linear response portion in my prototype was approximately 24 mV per dB which again is quite close to the typical value of 25 mV per dB quoted in the datasheet. The other important factor as mentioned above is that the response gets non linear below about -70 dBm (0.3 V output) and likewise above about +13 dBm (2.5 V output).

If we only wanted this meter to work at one frequency and were happy to look up a calibration curve for each measurement this could be a very simple attachment to a multimeter. However I also wanted a means of getting the data into a PC without having to re-type it, so this design goes further, utilizing a Microchip PIC chip (16F877A). This PIC has a 10 bit analogue to digital converter and as arranged here provides both a digital display plus a RS232 serial feed to a PC.

Graph 2 shows the raw A/D converter value obtained with this setup at a







number of frequencies.

Again this graph more or less reproduces the ones in the datasheet. As the frequency increases we can see that while the gradient stays reasonably constant the curves are effectively offset by increasing amounts and the effective dynamic range decreases. This can be seen more clearly in Graph 3, where we see that as frequency rises we need an increasing level of signal applied to maintain a constant indicated level.

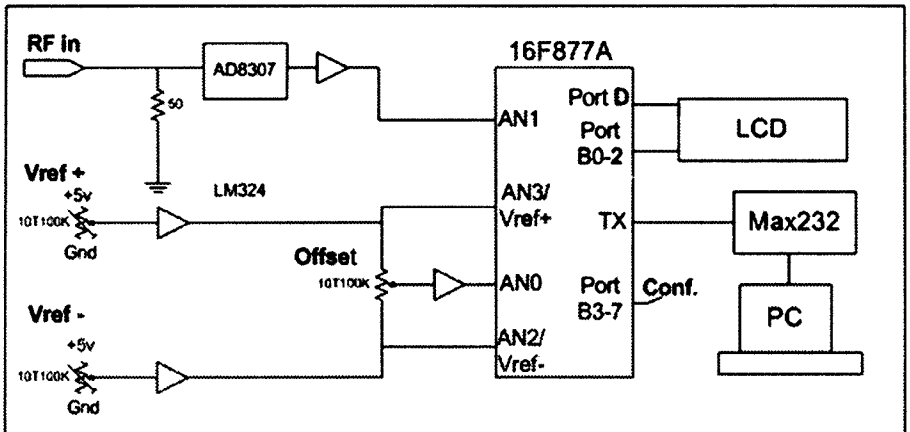


Figure 1. Block Diagram

The offset effect can be more or less compensated for by using some form of LC input network as is used in References 2, 3, and 4. There are however two problems with this approach. Firstly, unless you have access to some pretty good test equipment to tweak the values you are reliant on exactly duplicating the layout used in a previous design, as well as hoping that your AD8307 is not too different from the reference one.

Secondly the price paid for the first, say, 500 MHz being fairly flat is that you do lose some overall sensitivity, as well as the response dropping off drastically above 500 MHz, making it pretty much unusable above this point.

The overall design I ended up with is shown as a block diagram in Figure 1. In this approach the device has no compensation network. Compensation is of course still required but in this case is provided for the display in the form of a variable offset (the value of which can, for example, be determined from Graph 2 or 3), or alternately applied afterwards to the data as received on the PC. In the PC case quite complex compensation schemes can be performed with relative ease.

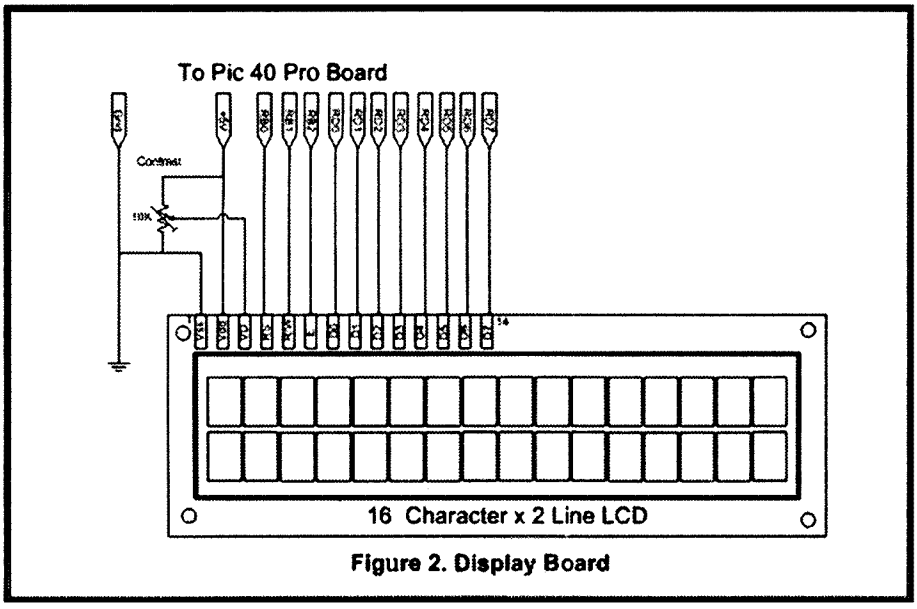


Figure 2. Display Board

The AD8307 is configured here pretty much as in the sample test circuit from the data sheet. The output from the AD8307 goes via a unit gain (voltage follower) buffer to one of the A/D inputs on the 16F877A. This design also utilises the feature of this PIC where two of the other A/D ports can be configured as the upper and lower voltage reference points.

Doing this gives two advantages; firstly the effective resolution of the A/D converter is concentrated in only the part of the curve we are interested in (that is, the linear bit) and secondly, by making minor changes to the voltage points it is possible to calibrate out any differences in detection slope of individual AD8307s. More on this later.

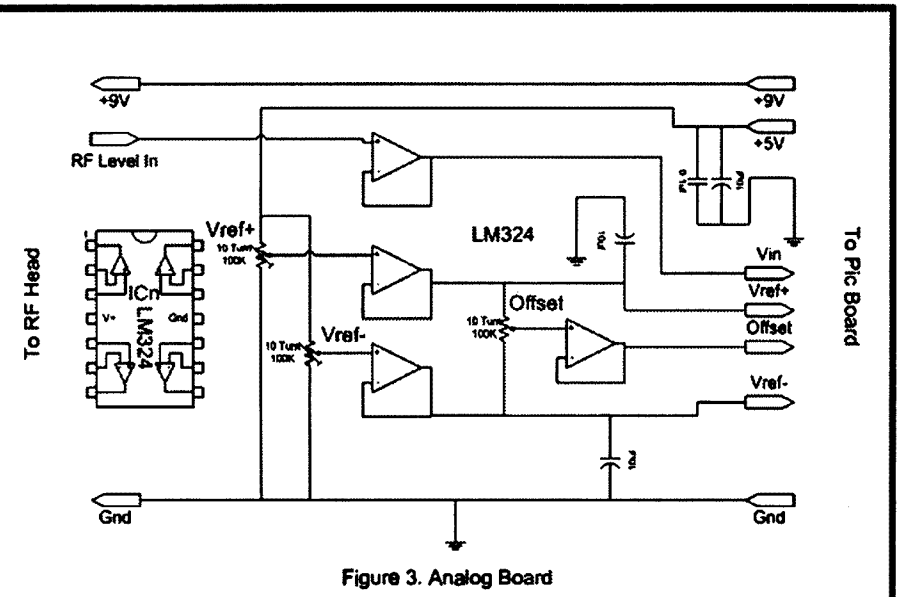


Figure 3. Analog Board

In this design these reference points are set via a pair of 100 kOhm ten-turn trim pots and again buffered by voltage followers. Another A/D input port is used to set the Offset, which is subtracted from the calculated value prior to

display. This Offset is set via an external pot and can be used to either compensate for frequency as mentioned above, or just to zero/set the indicated value to a more convenient point.

The PIC also drives a MAX 232 converter and provides a serial stream at 9600 baud to a PC if required to capture the raw reading. Finally there is a 2 line by 16 character display to show both the measured value and the offset.

The details of the circuitry are pretty conventional and are shown in Figures 2, through 5.

Figure 2 is a standard configuration of a 2 line by 16 character based LCD. I chose to use the slightly more efficient full 8 bit data transfer mode as there was no shortage of ports on the PIC. Also the most simplistic version of a contrast control was used; this may need to be varied depending on the actual LCD used, for example in some cases just earthing or grounding the VU or equivalent pin may produce satisfactory contrast, and in some cases the contrast is not variable.

Figure 3 is the DC analog processing; it uses a single LM324 general purpose quad single supply OP AMP configured as four separate voltage followers or buffers. One of these buffers in the RF Level path provides a relatively high input impedance to the AD8307 as well as the relatively low impedance required by the A/D input port on the PIC. The

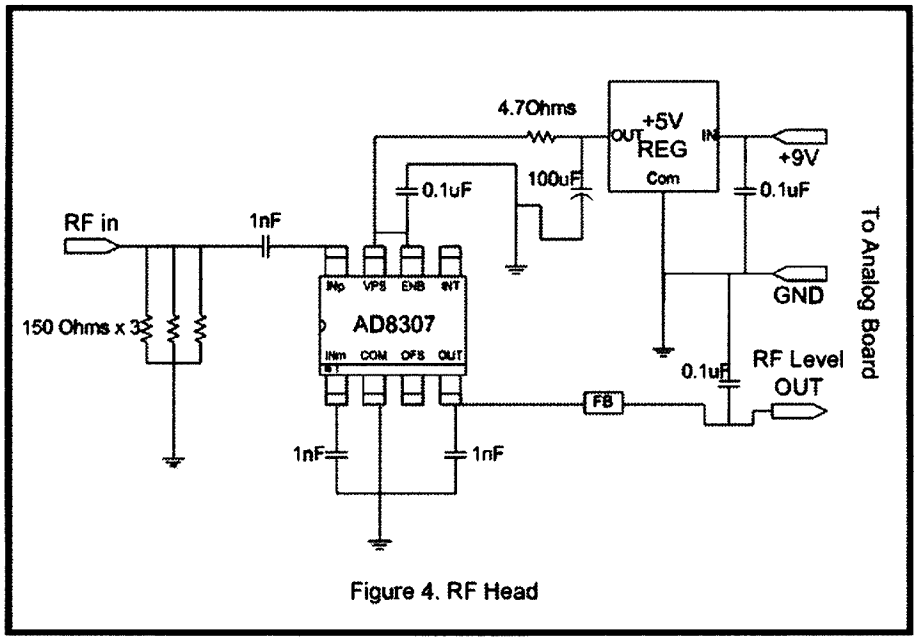


Figure 4. RF Head

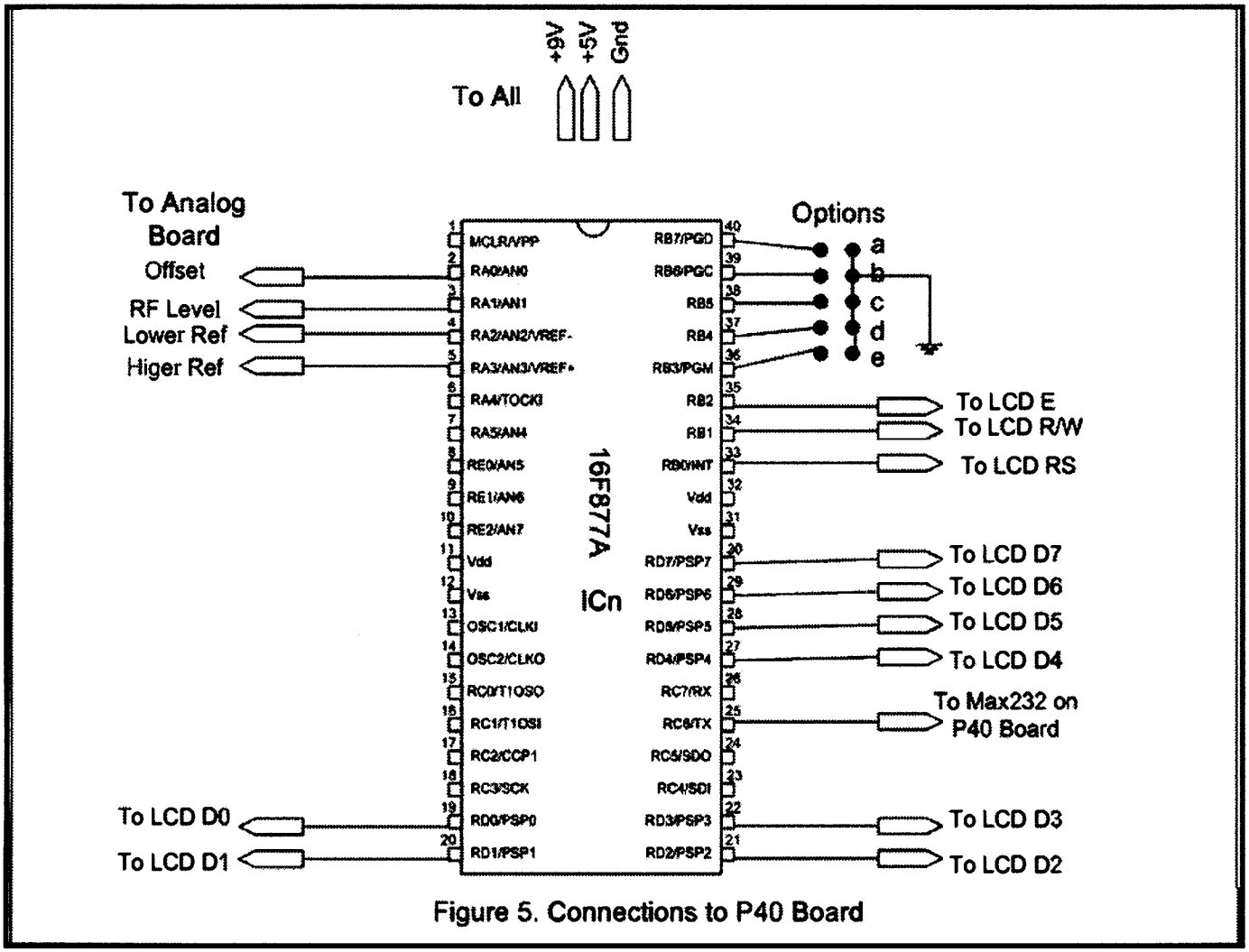


Figure 5. Connections to P40 Board

remaining buffers act to provide a similar low impedance level for the Vref+, Vref-, and Offset voltages. In my case I used 100 kOhm ten-turn trimmers for the reference voltages which can be set anywhere from 0 to +5 Volts, and a 100 kOhm ten turn pot for the offset which can be set anywhere from Vref- to

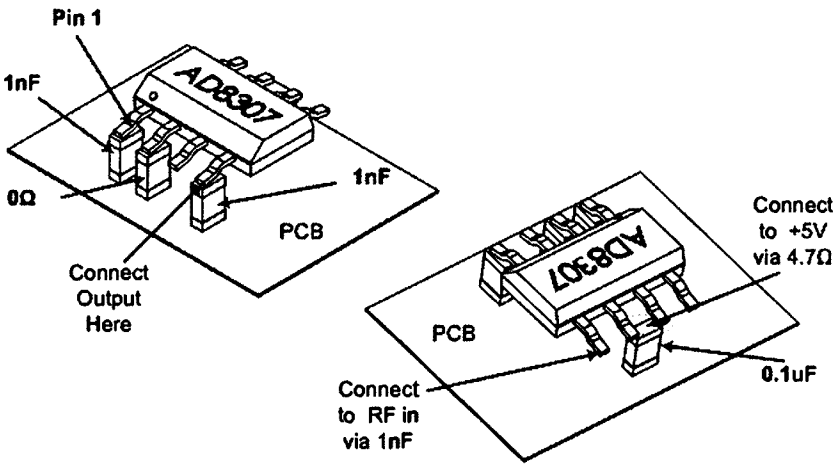


Figure 6. RF Head Construction

Vref+. The actual value of these variable resistors is not critical due to the action of the buffers, so any reasonably high value (say of the order of 10 kOhm or greater) would be OK. You could use single turn devices but setting the values with any precision would be tricky. The Vref values are bypassed with 10 uF +16 V or greater electrolytic capacitors to remove noise imposed on the lines by the A/D action of the PIC.

Note that due to limitations of the LM324 used, the buffers will only produce outputs between 0 volts and 3 and a bit volts; in this design however this is not an issue as there is no particular need to have any voltage greater than about 2.5 volts.

Figure 4 is the AD8307 RF head, the circuit here is basically the typical one from the data sheet. The capacitors directly associated with the AD8307 are surface mount ceramic ones while those associated with the regulator are tantalum for the 100 uF 10 V, and green caps for the 0.1 uF. The 4.7 Ohm resistor is a normal carbon or metal film quarter watt or greater, just used as a simple choke. The 5 Volt regulator in my case was a TO92 style LM2931 but again just about anything that would produce a clean 5 Volts from the 9 Volt or equivalent rail would be fine.

The ferrite bead was just a surplus one from the junk box to provide a little extra filtering and could probably even be left out with minimal effect. The three 150 Ohm resistors in parallel form a 50 Ohm load for the input which is relatively unaffected by the relatively high input impedance of the AD8307. In my case these three were again surface mount but could probably be pretty much any combination giving a 50 Ohm value that was OK for frequencies up to, say, 500MHz. Note that this front load has only to be capable of handling some 10s of milliwatts, so big resistors are not necessary.

Figure 5 is the PIC part of the circuit. For this project I used an OLIMEX PIC P40 Prototype board (Reference 11) which has a socket for the PIC, crystal, voltage regulator, MAX232, and various other items already installed. The board also has a reasonably large prototyping area where additional components can be wired. Full details of the actual PIC P40 can be found at Reference 11.

Figure 5 only shows the additional connections/jumpers needed for this particular project. The 5 x 2 jumper block effectively allows port B bits 3 through 7 to be used as an option input. The software on the PIC is set up to have these pins have a pull-up to + 5 Volts, so if no jumper is present the relevant pin floats high, alternately a jumper across to earth pulls that pin low. More details on what these options do can be found later in the configuration and setup section.

The PIC Code

In keeping with the simplicity of the rest of this design I also kept the code in the PIC pretty simple. For those interested in either taking this further or just having a play with PICs, I used, and can really recommend, the Basic compiler that comes with the excellent (both in value and features) package PIC Simulator IDE from Oshonsoft (Reference 8) which is also available from Dontronics (Reference 9). This total package enabled me to both produce the code and simulate its behaviour on the PC long before I actually had the hardware ready.

Rather than make this article longer than it is already I will include the source code for the PIC (along with the resultant HEX file ready to load in the PIC) in a zip file which can be obtained by either sending me an email with your return email address, or by downloading it from my web site as given in Reference 10. The basic structure of the code in the PIC is as follows:

Initialize things, set up ports to use both references, dimension variables.

Start a never ending loop.

Read the Configuration bits.

Read the Offset count.

Average out the Offset to allow for noise and the like in accordance with the configuration bits.

Read the Voltage in count.

Average out the Vin count to allow for noise and the like in accordance with the configuration bits.

Send the raw count out to the PC at 9600 Baud.

Subtract the offset from the voltage in.

Divide the result by either 10, 11, 12, or 13 in accordance with the configuration bits to give dB.

Display the offset and the result on the LCD.

Wait 25 ms.

Loop to 2.

You will see from this flow that depending on the configuration bits, which are set by jumpers, the PIC converts from the raw count of the A/D to a dB figure by dividing by an integer number from 10 to 13. I kept these

and the equivalent voltage span (that is, the difference between Vref+ and Vref-) is shown in Table 1.

Table 1. Voltage Span

AD8307 Slope	Integer Divisor			
	10	11	12	13
0.0230	2.355	2.141	1.963	1.812
0.0235	2.406	2.188	2.005	1.851
0.0240	2.458	2.234	2.048	1.890
0.0245	2.509	2.281	2.091	1.930
0.0250	2.560	2.327	2.133	1.969
0.0255	2.611	2.374	2.176	2.009
0.0260	2.662	2.420	2.219	2.048
0.0265	2.714	2.467	2.261	2.087
0.0270	2.765	2.513	2.304	2.127

We saw in Graph 1 that the valid voltages out from the AD8307 by itself are between about 0.3 and 2.5 Volts. This is a span of about 2.2 volts. In Table 1, for a value of approximately 2.2 with an AD8307 slope (also as measured from Graph 1) of 0.024 Volts per dB (that is 24 millivolts) the closest match is at a span of 2.234 with a divisor of 11. Thus in my prototype I set the configuration bits up for a divisor of 11. I also started out with Vref- set at 0.3 volts and Vref+ at 2.534 volts (that is, 2.234 + 0.3). Table 1 shows voltage input span values for each of the available divisors against a range of slopes between the maximum and minimum values expected as detailed in the AD8307 data sheet (Reference 1).

By a suitable choice of divisor and setting the span (via Vref- and Vref+) it should be possible to suit any variations in AD8307 you happen to get. It is also possible to use the span to get a trade off between accuracy and dynamic range. For example if I had chosen a divisor of 12 this would have indicated a span of 2.048.

I could have then set this span over the more linear portion of the response curve, losing some more range at the lower end. The increase in accuracy comes about both from this choice of the more linear region of the curve, and also from the effectively smaller step size in the A/D converter. More about this setup side of things later but the important thing to note is that minor variations in a particular AD8307's output can be compensated for by adjustments to the span (that is, by adjusting Vref+ and Vref-).

For those interested the span values come about from the ten bits of the A/D giving 0 to 1023 possible count values. If for example the span was set at 2.56 volts then each count would be 2.5 millivolts (that is, 2.56 /1024). If now you take the typical AD8307 slope value from the datasheet of 25 millivolts per dB, then you can see it would take ten counts of 2.5 millivolts to equal one dB (that is, 25/2.5) , thus in this case the divisor needed to turn raw A/D counts into dBs is 10.

Construction

The construction of the PIC part of this device is greatly simplified by the use of a pre-assembled PIC proto-board from OLIMEX, the PIC P40 board (available from Reference 11, and 9).

This board comes (at a very reasonable price) complete with all components (save the 16F877A PIC itself which is available from the usual Dick Smith/Jaycar type stores, as well as Dontronics). You will however have to get access to a suitable PIC programmer to program the PIC using the hex code available from me at Reference 10. This PIC P40 Proto board supports the simplest inline programmers via a header on the board so hopefully this will not be too much of a problem.

The PIC, Display and DC analog processing are quite straight forward to build. In my case I put the DC analog circuitry on a separate board to make it a bit easier to get at the adjustments. If you have suitable top-adjusting ten turn trimmers then you may, with a bit of squeezing, be able to put them and the LM324 on the blank proto area of the PIC P40 board itself.

This can all be seen in Photo 1. The small extra proto board and the plastic case were obtained from Dick Smith.

It may not be very obvious but I made extensive use of the amateur constructor's best friend after solder, that is, hot

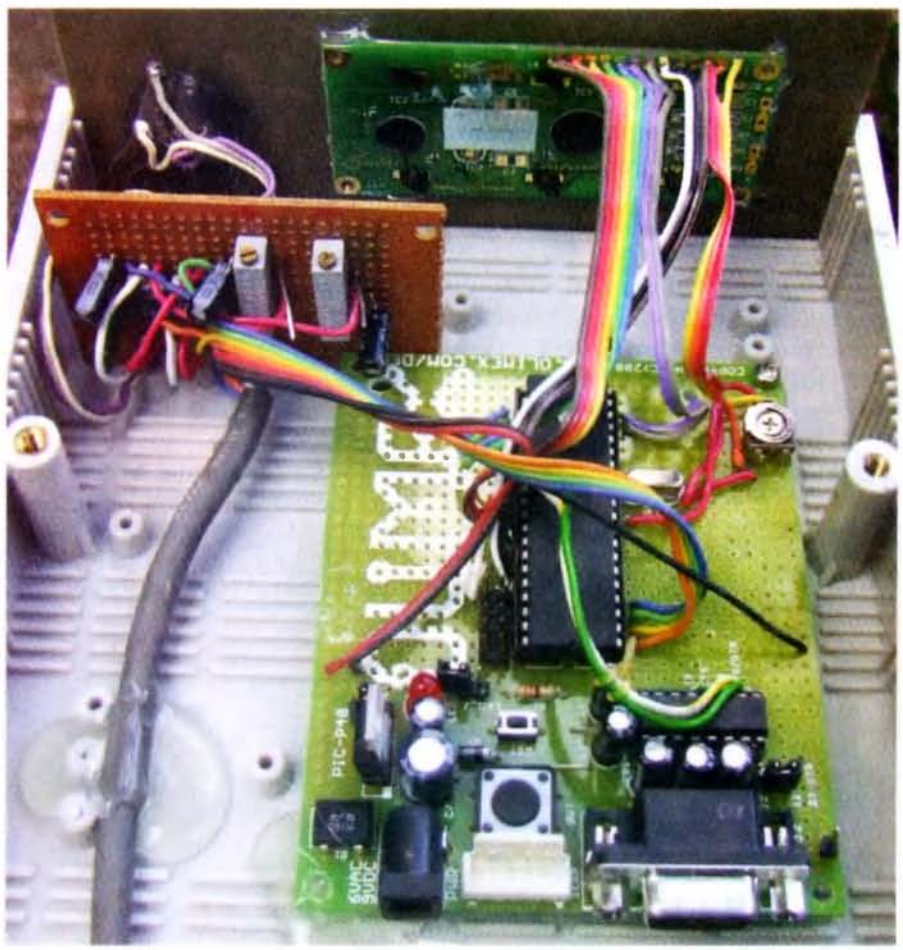


Photo 1: Inside the main case.

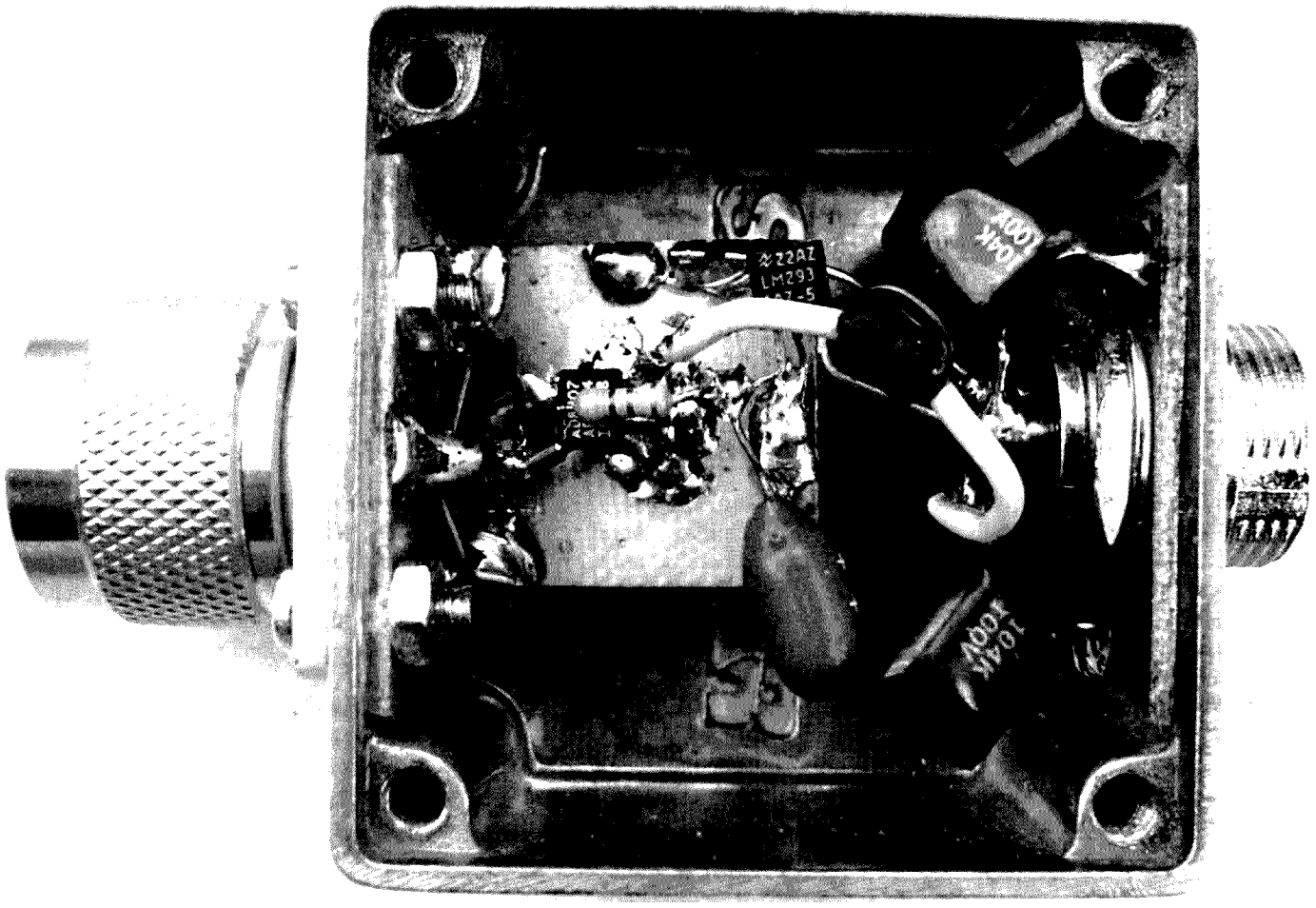


Photo 2: The RF Head.

melt glue. I used this glue to mount the various boards and the display in place, as well as providing strain relief for the cable out to the RF head.

You will note that the connectors on the back of the PIC P40 Proto board are power, programmer, and RS232. In my case the only items I added to the PIC P40 were the five way jumper block, the contrast pot for the LCD, the jumper to the Max232, and the wires off to the other units. Do not forget, however, that you need to remove the jumper for the LED on port A0, as well as selecting the 5 V position for the regulator jumper. If in doubt the PIC P40 documentation makes it clear where these are.

The other item to construct is a little bit fiddlier, using some very small components. This is shown in Photo 2.

In my case I got the AD8307 from MiniKits in South Australia (Reference 7) and the small diecast box from Jaycar (HB5060). The surface mount components came from Rockby Electronics. (Reference 12) and the other components came from the junk box.

I used a second hand N panel mount plug bought from a hamvention for the RF connector, and a three pin microphone connector for the power and level going back to the main unit. These components are not particularly critical and within reason whatever connectors you have will probably suit.

The RF head is formed from three small pieces of blank PCB, two are placed between the connectors and the box so as to make soldering to earth possible, and the third has the AD8307 on it.

The construction of the actual small bit of blank PC with the nominally surface mount AD8307 on it is probably the most physically difficult part of the construction process. The technique I used is related to the 'dead bug' style of construction.

While classic 'dead bug' has the IC on its back with its legs in the air, the technique here is more like 'live bug on stilts'. This technique is much more suitable for small surface mount components. Hopefully Figure 6 (which I thank my son Peter VK3FLIP for

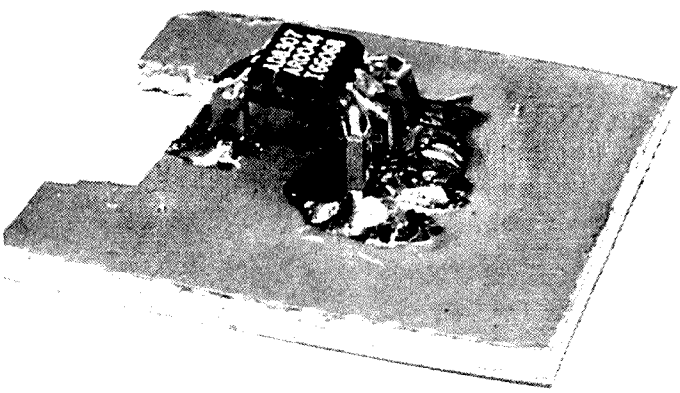


Photo 3: The RF head showing 'live bug on stilts' construction.

components. Hopefully Figure 6 (which I thank my son Peter VK3FLIP for drawing) makes this a bit clearer.

Start with a blank piece of PCB, the copper surface of which will be earth. The first surface mount component is soldered by one end to the board. One end of the component is to the board, the other is pointing up. Here I used a zero Ohm link which will ultimately go to pin 2 of the AD8307 as the first component. The AD8307 is then placed carefully and soldered with a quick touch of the iron to the top. For both these operations a small pair of tweezers is invaluable.

Once these first two connections are done the rest are relatively simple with the slight amount of spring in the AD8307 leads acting as mini clamps to hold the other components in place between the IC and the board while soldering. The tweezers and very fine solder will still come in handy however.

The real thing is shown in Photo 3. Note the small cut out nibbled from the PCB was, in my case, so as not to foul the centre pin from the RF connector.

The completed unit is shown in Photo 4.

Test and Calibration

After construction and programming of the PIC, connection of a suitable plug pack or equivalent, and powering it up you should see something displayed on the LCD.

If not there are two possibilities, the first and best is that the contrast is set too low, try adjusting it from one extreme to the other and hopefully finding a spot where it is acceptable.

If the second possibility is the case and it still does not produce something on the display then it is down to checking all wiring and so on until it does.

Given that you have got something on the display (and that you have left all the newly added five configuration jumpers open) you should be seeing something similar to that seen in Photo 4.

The first line saying Offset: followed by a number, and the second line saying Value. The next step could be to connect the RF head up to your signal generator and, with a multimeter, test to obtain similar results to Graph 1.

A simpler way is to just assume your unit will work similarly to mine and moving your multimeter to either the Vref+ or Vref-, set these voltages to the same figures as mine, that is, Vref- = 0.3, Vref+ = 2.534.

The jumpers A and B (on port B7 and 6 respectively) should also be set to a divisor of 11 as per Table 2a, that is, there is a jumper on both positions A and B to earth.

JumperA	JumperB	Main Divisor
Out	Out	12
Out	In	10
In	Out	13
In	In	11

Table 2a: Divisor setting

JumperE	Display
Out	Normal
In	Diagnostic

Table 2b: Diagnostic setting

JumperC	JumperD	Vin Averaging	Offset Averaging
Out	Out	8	16
Out	In	2	4
In	Out	4	8
In	In	1	1

Table 2c: Averages setting

This can be checked by putting a jumper in position E (Port B3 to earth) and putting the unit in diagnostic mode so that the display on the first line now shows the offset, the divisor and the averaging selected (Table 2c). The offset should change as you vary the main offset control with the net value being shown on the second line.

At this point you may care to adjust the averaging down a bit to make the display more responsive (Table 2c), but if you end up with a display varying too widely with nothing

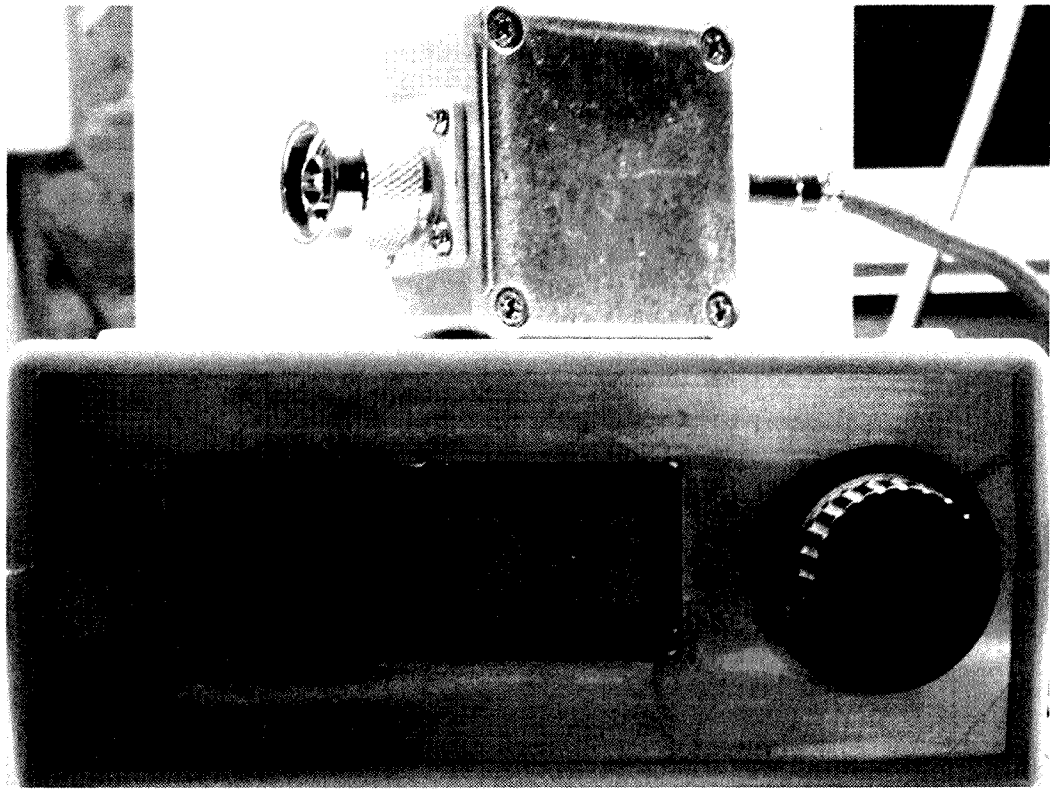


Photo 4: The completed unit.

connected to the RF head you may have a noise problem to track down.

Now is a good time to check the serial output stream. The simplest test is to connect up the meter to the PC (a serial mouse extension cord does the job well) and start up Hyperterm from the accessories program menu. Set the speed to 9600 baud 8 data bits no flow control and the port that you connected the cable to and you should start to see a series of v l = some number lines coming up on the screen.

You could at this point remove the jumper at E and, just leaving the device as is, start using it; depending how close your version is to mine all is probably not too far off.

To obtain higher accuracy you could, as previously stated, do the repeat of Graph 1 with your multi-meter and recalculate the Vref values according to the method mentioned in the PIC Code section, setting the jumpers accordingly if you decide to change the divisor.

Another way is to set up your signal generator at roughly the mid band point of your range of interest, say 100 MHz, and set it at 10 to 20 dB above where you start to see the display move.

At this point you can either zero the display using the offset, or just remember the number displayed. Then increase the output level in whatever steps the output attenuator of your signal generator allows, say 10 dB, and you should see the display go up by approximately this step size for perhaps another 60 dB.

If it is spot on then all is good and you can leave it, if not carefully adjust Vref+ to achieve the correct value on the display.

For example if you set the signal generator for 50 dB higher than the point you zeroed the display using the offset, then you should see approximately 50 dB on the value display.

If not adjust the Vref+ value using the appropriate trimmer until the reading is spot on 50 dB. These steps of setting the signal generator output down to about 10-20 dB above the noise, setting zero on the display, and then stepping up to say 50 dB higher and adjusting the Vref+ to obtain 50 on the display can be repeated a couple of times if necessary.

This process will quickly settle in on a Vref+ value which is right for your device.

Usage and PC Software

Finally some words on usage and a simple utility I produced to collect the data produced on a PC.

A close look at any of the graphs in this article will show that while the response of this meter to level at a particular frequency is pretty linear, it is not perfectly so. Similarly while just changing the offset at different frequencies comes close to compensating, this also is not perfect.

Even if the meter was perfect very few amateurs would have access to a signal generator that was equally perfect, so the only practical way to handle this is to calibrate the pair together.

To do this you basically need to do your measurements twice.

For a simple example assume that you wanted to measure the gain of a preamplifier over the range 100 MHz to 500 MHz. Firstly you do a measurement run with your signal generator connected directly to the meter, carefully recording your results at the various frequencies. In an ideal world these readings would all be the same, an effective 0 dB. Secondly you repeat the measurement with the preamplifier you wish to measure inline, again recording the values obtained at each frequency.

The final result can be found by subtracting the first set of values from the second. Say you had your signal generator set at 0 dBm and that on the straight through pass at 100 MHz you measured -0.5 dBm (that is, either the signal generator or the meter is a bit low at that frequency). With the preamplifier in at the same frequency and signal generator setting you measure say +11.6 dBm, then the real reading would be 11.6 -(- 0.5) or 12.1 dBm.

A similar mechanism can be used with the dBm meter as the detector on a Return Loss Bridge. In this case, within limits, this compensation technique also

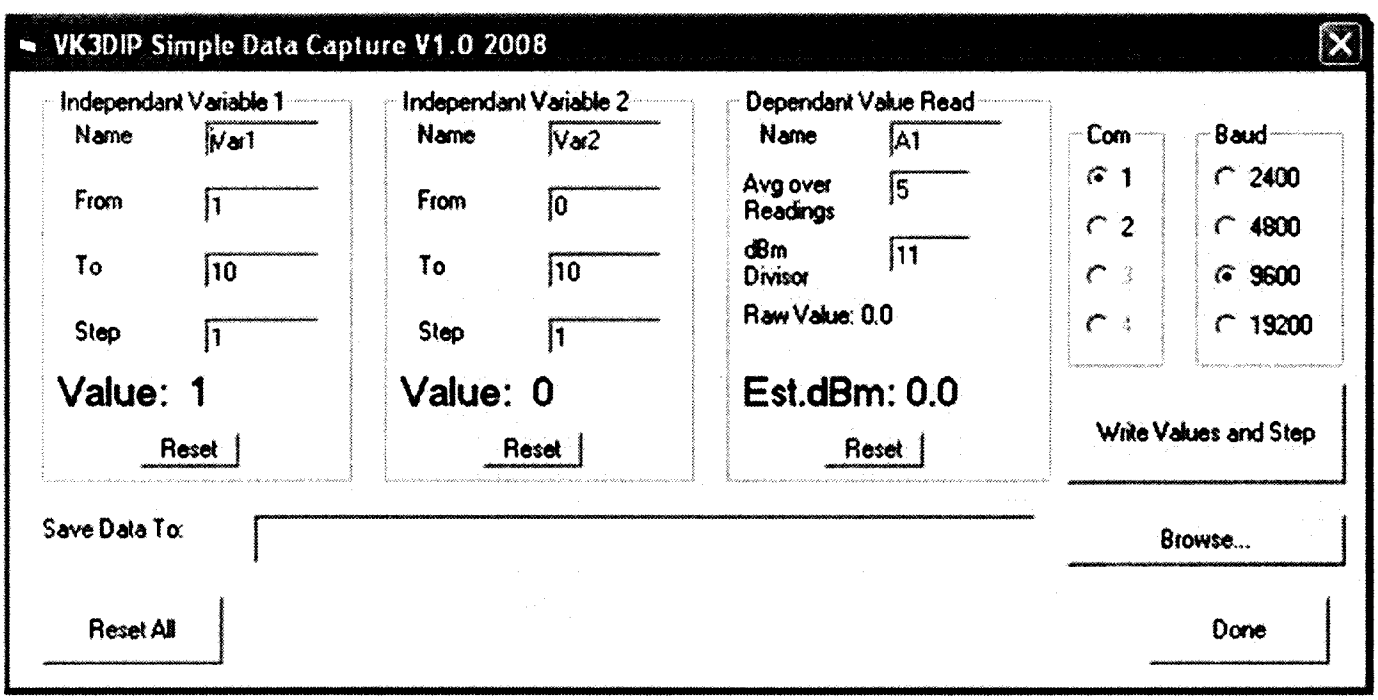


Figure 7: Screen capture of the PC capture program.

works to calibrate out frequency effects in your RLB. This simple subtraction technique is not perfect as it assumes that the detector response is a perfect log one across various signal levels. It can be made better however by doing a series of additional measurement runs keeping the frequency constant while varying the levels.

Doing all these measurements and physically writing down the results obtained can take a lot of time and is prone to human error. A better way is to capture the results directly on a PC and put them into a spreadsheet like MS Excel where the various calibration tasks can be done very simply. To facilitate this I produced a simple utility that runs on a PC, the main screen of which is shown in Figure 7. This data capture program is written in VB5, and I will include the source and executable for it in the distribution. If you haven't got the VB5 Runtime you may need to get that also, if you get messages about missing files when you try and run it.

Using the software on the PC is straight forward:

Copy the executable (dipread.exe) and the mscomm32.ocx to some convenient directory on the PC.

Try running dipread, if it does not run you will need to get the VB5 runtime files (see Reference 13).

Connect the power to the PIC board, and using a straight serial cable, such as a serial mouse extension cord; connect up to a free communication Port on the PC/laptop.

In dipread select the correct comport, and the speed of 9600, using the radio buttons on the right.

If all is OK you should start to see the raw and estimated values in the Dependent Value Read area getting some data.

Using either the browse button or by just typing in a file name in the 'Save Data To' box select/create a file to save the captured data to.

You can set the Dependent value name if desired as well as setting the average value (for example '5' means average the value over five readings) and the dBm Divisor (set to the same value you set via the jumpers) so as to give you a rough dBm value in the Est. dBm line.

The two independent value areas are purely there to save typing work, each time a value is read from the meter and written to the file (using the write values and step button) the two values in the independent variable areas are also written.

The From, To and Step Size fields in the independent variables areas control what these values are and how they are incremented.

When you have finished collecting data just click done, and you should be able to open the saved file in a spreadsheet or whatever as it is just a comma separated format.

Typical use might have dependant variable one; Name = Freq (MHz), From = 100, To = 200, Step = 10. And dependant variable two; Name = Level (dBm), From = -50, To = 10, Step = 10. Assuming the count read from the meter was 200 then the first record written in this case to the file (when the write button was clicked) would contain (after the headings) 100,-50, 200.

The second click, if the count from the meter had not changed, would read 100, -40, 200, and so on cycling through the second dependant variable as many times as needed (each cycle of the second dependant variable increments the first) until the first dependant variable had completed one cycle.

This mechanism, as you may have guessed from the names, can be used to manually tell you what setting you should have on say your signal generation. Capturing then becomes a case of setup for the initial measurement, click write, set the signal generator to the new values indicated and click write, and so on until done.

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http://www.dontronics-shop.com/

10/. Send Paul McMahon VK3DIP an email request at pmvk3dip@bigpond.net.au and I will send you a reply email with the source and hex/executables for all the code mentioned in this article. Alternately the files can be downloaded from http://mywebsite.bigpond.net.au/pmvk3dip/

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12/. Rockby Electronics. http://www.rockby.com.au

13/. VB5Runtime.

The VB5 runtime files are available from www.Microsoft.com, in knowledge base article 180071, alternately search for Msvbvm50.exe and it will be found on a number of sites. Just run the exe to install.

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The WIA Seeks Volunteers

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A solar powered ham station

Rob Norman VK5SW

There is an interest, nowadays, in various alternative forms of power but the most popular for amateur radio operators would have to be solar power.

The problem, however, is that I do not know much about it but I can share with you what I do know. I have been operating my 'solar station in the bush' for a couple of years now and it has been working very well, although my situation is probably a little different to most, in that we use our property as a 'getaway' and we're only there for a few days each month or so, and therefore the demand on the battery is infrequent.

There are basically three components to a solar installation: the solar panel, the battery and the controller, to regulate the current going into the battery. It is basically that simple.

The sizes of these depend on the amount of current you need to draw from the battery and the duration. Once you work out these two requirements, you are able to figure out the capacities of the three components.

In my case, for example, I operate CW on HF, so the current draw on the battery would be about 20 Amps or so, although I only run the radios at about 75% of full power, that is, 75 watts. So, let us say the current demand is about 20 Amps anyway.

If I was to run the transmitter for one hour, it would mean that the battery has used 20 AH (Amp Hours) in that one hour period. Batteries are rated in terms of their voltage and the number of AH that they can supply. However, batteries used with solar panels need to be of the 'deep cycle' type.

They should only be discharged up to and no more than about 20% of their capacity. If, for example, you have a 100 AH battery, it should not be discharged by more than 20%, that is, 20 AH, so that 80 AH of the battery's capacity should still be available.

The battery I use has an AH rating of 670 AH. 20% of that is approximately 130 AH. So, I am able to draw that amount, 130 AH without harm to the battery. Most people would think this to be 'overkill' but I tend to do this sort of thing. Therefore, if the transmitter was to run for six and a half hours, at 20 Amps, the battery would be down to the allowable 'discharge level'.

There are many different types of batteries available nowadays, but I bought a lead acid type, made by Exide in the USA, because it is a proven and reliable type of battery, old technology.

It consists of two volt cells in series to form six volt batteries, two of which make up the 12 volt supply. A battery this size can power a small house but you would need a number of panels to recharge the battery due to the regular current drain by house hold appliances.

They are not cheap, this one cost $1500 a couple of years ago and the expected life is about 10 years if looked after properly. The voltage at the battery fluctuates with the current coming into it from the panel. It may swing from 12 volts or so of a night to 14.5 volts or so in the daytime. I have three different radios that I have used with this battery and the voltage swing doesn't seem to affect them.

The amount of charge going into the battery is dependent on the size of the panel, its direction towards the sun and the availability of sunshine. Since we are not at the radio QTH all the time and drawing current, the battery does not need to be charged quickly on a regular basis.

One 80 watt panel is sufficient for my needs, that is, to keep it charged. It is made by BP and cost nearly $700. The

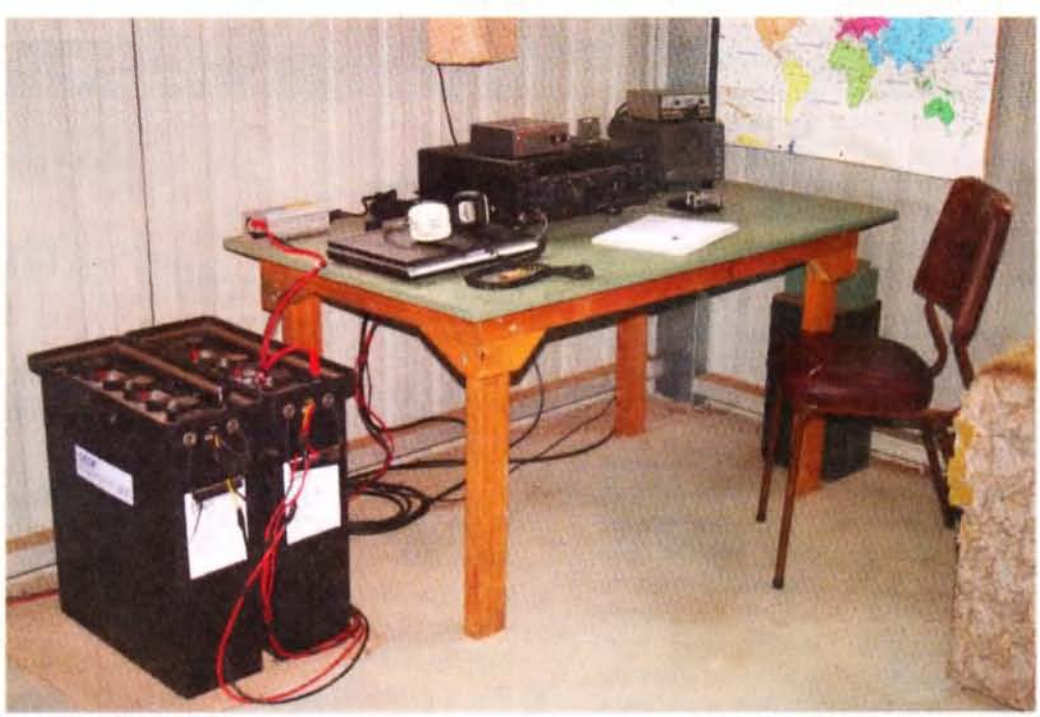


Photo 1: A view of the solar powered station featuring the heavy duty, deep cycle batteries used.

direction that the panel faces is important to maximise the exposure to the Sun. Also, the angle to the horizontal should be optimized to ensure that the Sun hits the panel as near perpendicular as possible throughout the year. High tech ones track the sun!



Photo 2: The solar panel used – the source of the power to replenish the batteries.

The 'charge controller', or 'regulator' ensures that the right amount of current from the panel is fed to the battery. When there is a large current drain from the battery, the regulator will allow maximum current to flow into the battery from the solar panel.

With the panel shown, a maximum current of nearly five Amps can be produced with a cloudless sky. When the battery is nearly fully charged, only a small amount of current is sent to it. The maximum Amp Hours this panel can manage at this QTH seems to be about 35 AH or so a day.

When buying the battery and panel, the sales people will sell you the appropriate controller as well.



Photo 3: The PL-20 solar controller.

The charge controller is able to tell you a lot of information, for example, the amount of current going into the battery at the moment, the number of AH already gone into the battery since a certain time each morning, the total AH sent to the battery each day, and more.

The other consideration is the wires connecting components. To reduce voltage drop, ensure that you use heavy gauge wires and also use fuses in the main lines.

Ask the sales people questions, they want your business.

I hope this is of help in building your own solar powered station. You can see mine at www.VK5SW.com

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2009 WIA AGM and Open Forum

Michael Owen VK3KI

The WIA's 2009 Annual General Meeting and Open Forum was held at the Gippsland Campus of Monash University at Churchill on 2nd May 2009.

The AGM/Open Forum was held in conjunction with a range of activities built around the highly successful annual conference conducted by the Eastern Zone Amateur Radio Club every July, Gipps Tech, as Gipps Tech "Special Edition".

The Annual General Meeting honoured 42 WIA members who had become Silent Keys in the year since the previous AGM, but otherwise was very much a formality. The Open Forum following the AGM was very much the opportunity for members to learn, question and comment.

The Open Forum commenced with the presentation or announcement of a number of awards, and then some 23 reports on various WIA activities were presented.

The President reported mainly good news, the total number of amateurs continued to grow, and the WIA's membership also continued to grow. Responsibility for certificates of proficiency and the recommendation of callsigns, had added to the workload of the office, and helpers were needed.

During the Open Forum it was announced that particular emphasis would be placed on emergency communications during the forthcoming year, with three directors led by Phil Wait as Coordinator with WIA RTO Fred Swainston to formulate and accredit amateurs gaining nationally recognised competencies relevant to the provision of emergency services.

WIA Director Ron Bertrand was an apology, having become ill just before leaving home to come to Churchill, but all the other Directors were present, and received much valuable feed-back, both formally and informally during discussions over the weekend.

The weekend was judged a success by those participating, who now look forward to the special events of next year, the 100th anniversary of the WIA and its antecedents.

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WIA announces 2008/2009 Awards

Michael Owen VK3KI

A number of awards were announced at the Open Forum following the WIA's Annual General Meeting on 2nd May 2009 at the Gippsland Campus of Monash University at Churchill.

Three awards announced are awards presented on the recommendation of the Publications Committee, of which two are directly related to the magazine Amateur Radio.

Al Shawsmith Award

The Al Shawsmith Award was awarded to John Sparkes VK6JX for his article "DX Chasers Club - Faure Island DXpedition, 2008" published in November 2008 AR.

AR Technical Award

The AR Technical Award for the best technical article was awarded to Ron Sanders VK2WB for his article "A balanced antenna matching unit" published in April 2008 AR.

Higginbotham Award

The Higginbotham Award was awarded to Graham Ratcliff VK5AGR for his long contribution to amateur radio as the National Coordinator of AMSAT-VK, promoting the amateur satellite service.

This year the Board sought the advice of the Advisory Committees before deciding on the other WIA awards.

Ron Wilkinson Award

Stan Bourke VK2EL was awarded the Ron Wilkinson Award. The inscription on the certificate reads "In recognition of his contribution to amateur radio and the WIA for over 60 years as a technical innovator, the provider of technical support for his Division and WICEN, as a supporter of his club and as a trainer and Assessor of amateurs."

President's Commendations

President's Commendations were announced for Peter Weeks VK3YZP for his work in WICEN over many years, Mark Dods VK3XMU for WICEN and their work in the Victorian fires, Mavis Stafford VK3KS, 70 years licensed, and Ted Thrift VK2ARA for his work as WIA Club Coordinator.

These awards will be presented to the recipients at suitable events.

In announcing these awards WIA President Michael Owen VK3KI said that the WIA and amateur radio was helped by the work of very many people, but the WIA was not very good at saying "Thank You." The awards presented by the WIA was one way in which amateur radio could both thank these people and also remember the past with awards honouring the contribution of earlier generations.

continued next page

Tony Hutchison receives Chris Jones Award

Tony Hutchison VK5ZAI is the WIA ARISS Coordinator and ARISS Coordinator for the Asia Pacific Region.

Tony says that ARISS, Amateur Radio on International Space Station is a positive way of introducing our hobby of amateur radio to students, and others throughout the world, by demonstrating how it is used to communicate with the crews on the International Space Station.

During the year, eight schools in the region took part in scheduled link ups with the ISS crews, including three from New Zealand and the rest from Australia.

The value of Tony's contribution to amateur radio and the WIA was recognised by the presentation of the Chris Jones Award at the Open Forum.

The award is a handsome glass plaque and presenting the award to Tony, WIA President Michael Owen VK3KI read the inscription which is:

"The Chris Jones Award honours the memory of a man who was dedicated to the advancement of amateur radio and whose unfailing commitment and vision led to a new Wireless Institute of Australia and whose unfailing courtesy and genuine friendliness is fondly remembered by all who knew him."

Tony accepted the award, thanking all those who had supported ARISS.



WIA President Michael Owen VK3KI presents the award to Tony Hutchison VK5ZAI

(Editor's note: See the inside back cover for a colour photo of Tony with his award.)

Peter Freeman awarded G A Taylor Medal

The final award was the rarely presented G A Taylor medal. This award was first suggested back in 1981, finally being struck in Perth in 1988. The medal is presented in a box, with an inscription of the award's history.

(Editor's note: See the inside front cover for a colour photo of Peter with his award and the full story of the award.)

In presenting the medal to Peter Freeman VK3KAI, WIA President Michael Owen VK3KI stressed that while Peter had contributed to amateur radio in many ways, in particular with the annual VHF/UHF oriented technical conference GippsTech conducted by the Eastern Zone Amateur Radio Club, it was his ongoing contribution as Editor of Amateur Radio and Chairman of the Publications Committee that was being honoured. Michael paid tribute to the quality of the magazine under Peter's direction, acknowledging the ongoing pressure of deadlines imposed on those producing the magazine.

In accepting the medal Peter expressed his surprise and gratitude, paying tribute to all of the Publication Committee members who worked for the success of the magazine.

ar



WIA President Michael Owen VK3KI presents the award to Peter Freeman VK3KAI

GippsTech 2009

presented by Eastern Zone Amateur Radio Club (Inc)

Weekend of July 10, 11 & 12,

Monash University, Gippsland Campus,

Churchill, Victoria

A full program of technical presentations relating primarily to

VHF, UHF and microwave weak signal communications

Lots of time for informal discussions

Displays of equipment bought by attendees

Full details can be found on the club website:

http://www.vk3bez.org/

"GippsTech – Special Edition" and the WIA AGM activities

Peter Freeman VK3KAI

EZARC organizes a happy marriage between the WIA AGM and a form of its own well-regarded Gippstech event. The combined weekend was a great success.

In late January 2009, I was approached by WIA Director Robert Broomhead VK3DN with a request for my local club, Eastern Zone Amateur Radio Club (Inc.) (EZARC) to consider changing the date of its signature event – GippsTech – to earlier in the year.

The aim was to consider holding GippsTech as an adjunct to the WIA Annual General Meeting. Following discussion with Robert whilst showing him around the Gippsland Campus of Monash University, I undertook to raise the question with the Club committee.

At the committee meeting, a universal opinion was that we were not willing to move our event to the extent required to fit in with the WIA statutory requirements, which needed the meeting to be held in May. However, the committee did offer to host an extra event with a theme similar to the traditional GippsTech.

Robert was delighted with the news, and thus we all commenced detailed planning. The first decisions were to confirm the date and settle on a name for the conference part of the weekend of activities. Thus "GippsTech – Special Edition" was born. Part of the logic was to both build on the reputation of GippsTech as a worthwhile attraction, and to hopefully raise awareness of GippsTech amongst those who attended the AGM weekend, with a possible outcome being that they would consider attending the "main event", held each year in July.

..... with a possible outcome being that they would consider attending the "main event", held each year in July.

Presentations at the usual GippsTech are offered by amateurs who are willing to share their experiences. I normally start calling for papers early each year, with offers coming in slowly until late May. Then there is usually a rush of offers and we end up with a very full program. With the need to fit the formal AGM and the informal Open Forum into the weekend, this approach would not be suitable. I therefore developed a plan: I would approach some notable presenters who I knew would be able to give a new slant to topics previously presented at GippsTech, with a flavour that reflected the main GippsTech event, plus I would ask some individuals to present on some topics that I thought would be of interest to all amateurs present. Fortunately everyone agreed to present! We also prepared a break out session focussed on Foundation licensees.

As I work at the campus, parts of the organising tasks were relatively easy – many aspects are essentially the same as the usual GippsTech. Rooms were booked, the catering organised for Friday evening and Saturday lunch. Robert undertook the tasks associated with the AGM, including the Dinner on Saturday evening and breakfasts for Saturday and Sunday, and the tours planned for Sunday afternoon. Robert also organised the promotion of the event and registration processes.

Registrations proceeded well, with an on-line form linked to an e-commerce system. This allowed attendees to register and pay on-line, with processing occurring through the WIA office following completion of the on-line process. With about a week to go to the event, we were close to 100 people coming. I believe that the final numbers were about 115, with around 80 people attending each of the major events planned and a small bus was operating on Saturday for the alternate activity.

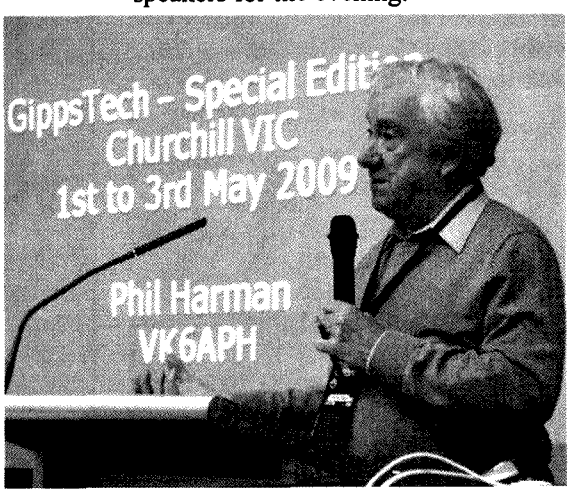
Final arrangements were in place and everything started to happen early on Friday afternoon. Robert arrived, with Phil VK6APH on board. Just as we were ordering lunch, Guy VK2KU called me on the mobile phone to advise that he had arrived. Guy arrived a little while later to join us for lunch, after which we started many tasks: checking the rooms to be used, erecting directional signs and a mast with VHF vertical and HF portable antennas. All was in readiness at the venue.

Friday evening

Attendees started arriving at the University from around 1630 on Friday; with a few requiring some directions to find the best place to park and then enter the buildings.

The evening activities were held in the Bistro on campus. We were able to enter the venue at around 1800, with much discussion occurring amongst attendees. By about 1830, the catering staff began serving the main course. At an appropriate time, dessert was on offer, with coffee and tea available as well. Everyone enjoyed the meal. Throughout the evening, much discussion continued.

At around 1930, Robert welcomed everyone and introduced the first of the speakers for the evening.



Michael Owen VK3KI opening the Conference

Chris Morley VK3CJK is Secretary of EZARC, but was tonight wearing his hat as Secretary of the Latrobe Valley Astronomical Society (LVAS). His presentation took us through 400 years of astronomy, accompanied by many interesting images and outlines of the developments in telescope technologies that have occurred over that period.

Following Chris were **Rex Moncur VK7MO and Justin Giles-Clark VK7TW**, who presented on the developments they have undertaken to date on communications using optical waves, notably using Luxeon LEDs. So far, they have made one-way contacts in excess of 200 km over obstructed (not line of sight) paths. They outlined their plans for attempting a 300 km path using their current equipment.

Following the presentations, most attendees moved out into the University grounds for some interactive displays. LVAS members had several telescopes set up, but unfortunately the cloud had moved in, so little could be seen in the heavens. Ralph Edgar VK3WRE demonstrated some optical communications equipment, showing everyone that the systems were relatively simple and did produce usable signals, by bouncing the light waves off some trees a couple of hundred metres away.

Most had headed off by just after 2200 as a long day of activities was to start before 0930 the next morning!

Saturday: GippsTech – Special Edition

Saturday began bright and early, with only one hiccup – we were unable to access a water source early enough to ensure that we had hot water for tea or coffee prior to the day's main activities beginning.

The alternative activity was organised by Margaret from the WIA office. Aimed at those who did not wish to partake of the technical presentations, it took in several cultural and historical sites around the Latrobe Valley.

The group visited the Morwell Rose Garden, Latrobe Regional Gallery (LRG), the Brown Coal Museum at Yallourn and Narkoojee Winery at Glengarry. Of course, key sites had appropriate refreshments: the Café at the LRG was the venue for lunch, and afternoon tea was at Narkoojee, in conjunction, I am sure, with some samples of their fine wines.

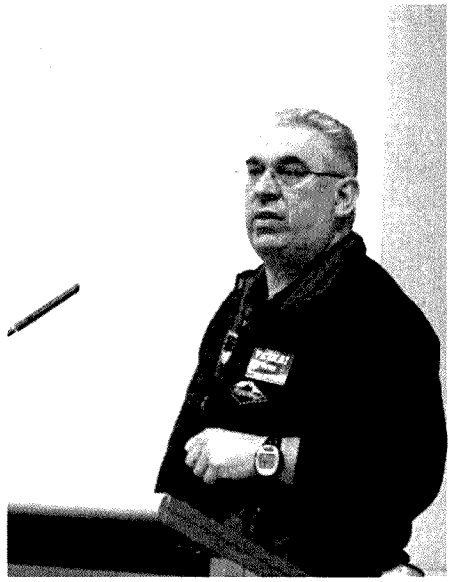
At Churchill, the day was launched at around 0900 by WIA President Michael Owen VK3KI, followed by a quick introduction to GippsTech by yours truly. We then kicked off the presentations for the day.

Phil Harman VK6APH is heavily involved in the HPSDR (High Performance Software Defined Radio) project. He has co-authored a series of articles in Radio Communication (RadCom), the RSGB equivalent of *AR*. Phil gave an overview of the principles of Software defined Radio and concluded with an outline of the key HPSDR project modules – one can put together a complete SDR transceiver covering LF to 55 MHz using the currently available HPSDR modules.

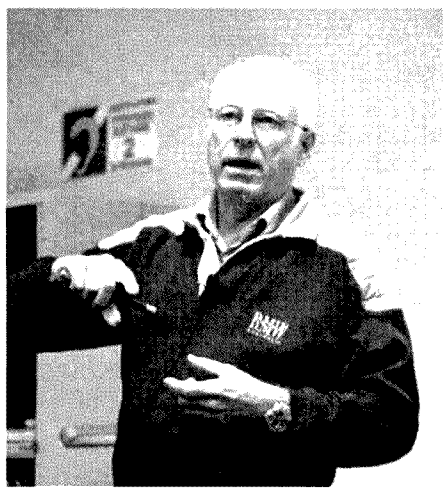
Next up was **Andrew Martin VK3OE (ex VK3KAQ)**. Andrew reviewed the history of tropospheric ducting as a mode of enhancement on VHF and UHF frequencies, from Ross Hull's observations in the US through to recent events. Andrew's work has previously been presented at GippsTech and in *AR*. He has developed a keen understanding of the mechanisms involved in propagation using ducts and is more than willing to share his understanding.

The coffee break allowed opportunities for discussion in addition to obtaining a refreshing brew. It also gave attendees an opportunity to peruse the stock of the WIA Bookshop and to examine copies of the Proceedings volumes from GippsTech events past. Throughout the breaks in the program, some of the EZARC members were selling raffle tickets. Following the coffee break, we broke into two streams of talks.

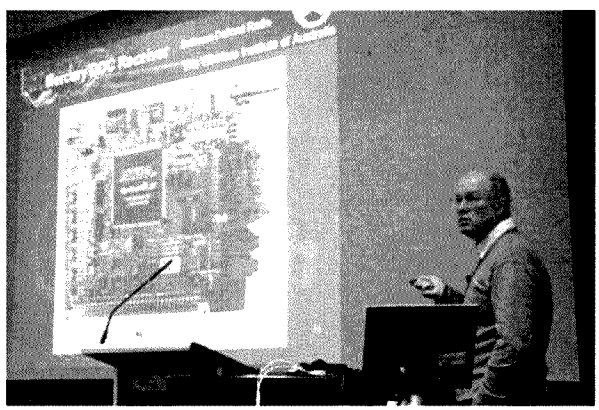
The stream intended for Foundation licensees had a set back before the weekend commenced: Ron Bertrand VK2DQ had succumbed to illness and was not able to attend. However, **Michael Owen V3KI and Phil Wait VK2DKN** ably lead a discussion about how to go about upgrading to a higher level licence. This session was followed by a presentation by **Roger Harrison VK2ZRH** on what amateurs might expect in the way of HF



Peter Freeman VK3KAI outlined the amateur microwave bands and some of the equipment that can be utilized for microwave communications. Here he is describing the working of parabolic reflector antennas.



WIA Director Phil Wait VK2DKN took the audience on an entertaining walk through a high efficiency but high quality AM transmitter for 40 m.

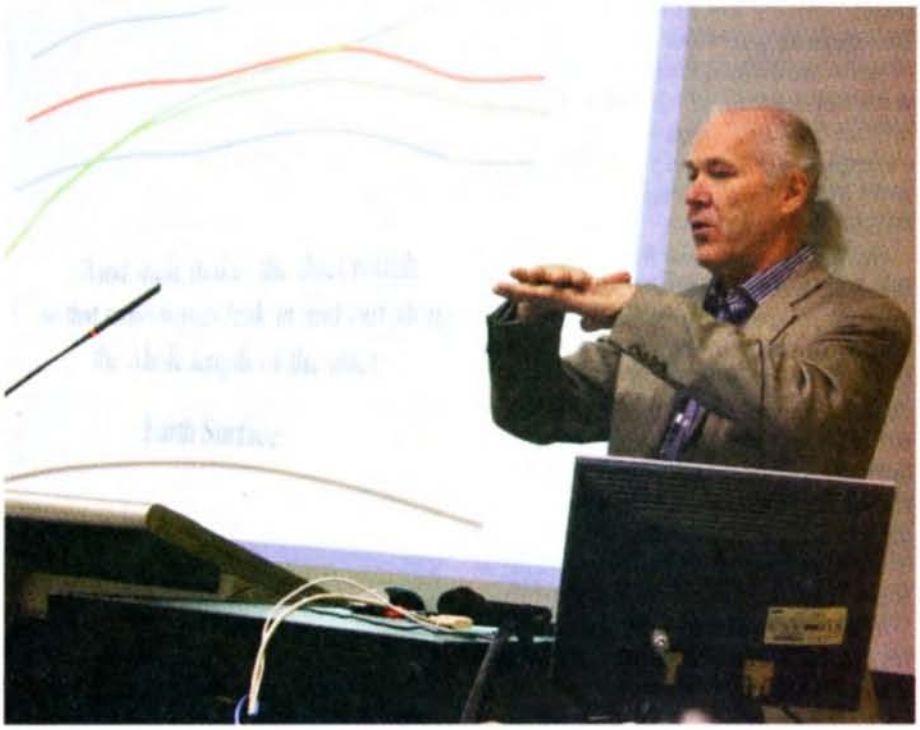


Phil Harman VK6APH describes the features of the Mercury Direct Digital Conversion Receiver module, part of the HPSDR project. (See cover photo)

propagation as we move into the next sunspot cycle.

The main lecture room continued with two further presentations. **Drew Diamond VK3XU** gave the audience an introduction to what amateurs might expect with the new frequency allocation at 136 kHz, giving examples of suitable transmitters, receivers and what might be achievable with regard to antennas. It became clear in the afternoon Open Forum that Advanced amateurs can apply now to access this frequency allocation, by applying for a variation to their licence.

David Smith VK3HZ then discussed the "where, why and how" of locking amateur transceiving equipment GPS-locked frequency references. David's talk was focussed on VHF, UHF and microwave equipment, but provided information on why this may become an important issue for all amateurs in the future.



Andrew Martin VK3OE (ex VK3KAQ) explaining the interactions between elevated ducts and radio waves.



Barry Miller VK3BJM lead the audience through the history of amateur exploitation of Aircraft Enhancement propagation and outlined how you can exploit the mode on VHF and UHF frequencies and possibly beyond.

After the second session presentations, almost all attendees enjoyed the barbeque prepared by the Churchill and District Lions Club. Basic food, but relatively easy for all involved (apart from the Lions Club members) – all that we needed to do was to line up and be served! A side benefit is that any profit goes towards projects that support the local and broader area communities.

WIA AGM

After lunch, all still present gathered in the main lecture room for the WIA AGM and Open Forum. The AGM was completed quickly, in around 12 minutes. All that needed to be completed were the necessary formal requirements.

The Open Forum commenced with the presentation of Awards by the WIA for the past year. You can see the details in another article in this issue.

A number of reporters were then invited to present the highlights of their annual reports, with opportunities for audience members to ask questions and/or pass comments. At the end of the session, all agreed that the Open Forum was a valuable aspect of the weekend, and that consideration should be given to increasing the time allocated to the forum.

Annual Dinner

Most attendees gathered by 1800 hours at the Century Inn for the Annual Dinner. With both amateurs and partners in attendance, there was much discussion about what had occurred earlier in the day. To the delight of all a superb meal was served.

Following dinner, we had a presentation from Dr Rob, who is a member of a team that presents weekly on community radio and the World Wide Web, with a focus on current and possible future technologies, their uses and future implications. The light-hearted presentation was well received and informative.

Sunday morning: more GippsTech – Special Edition

Sunday morning saw another early start, especially for those joining in at the informal breakfast at Century Inn.

Activities kicked off at Churchill at 0900, with Barry Miller VK3BJM talking about Aircraft Enhancement and

how to exploit it. Barry explained some of the history and controversy regarding this propagation mode, how it works and what may be achievable. He also outlined the aids that are now available and how you can go about attempting to use the mode to contact that distant, rare, grid square on VHF and UHF.

The next presentation was by your author, giving an introduction to microwave communications for amateurs. This topic could go for hours! I attempted to give an outline of the reasons why microwaves are attractive to some amateurs and how we can go about using the microwave bands.

The GippsTech – Special Edition talks were completed with an entertaining presentation by Phil Wait VK2DKN on how to construct a high-quality AM transmitter for 40 metres. Phil has described this project in past issues of *AR*, and gave an outline of the design principles and practical considerations involved in constructing a high power AM transmitter.

Proceedings concluded at Churchill about fifteen minutes late – we had run a little over schedule.

Topical tours

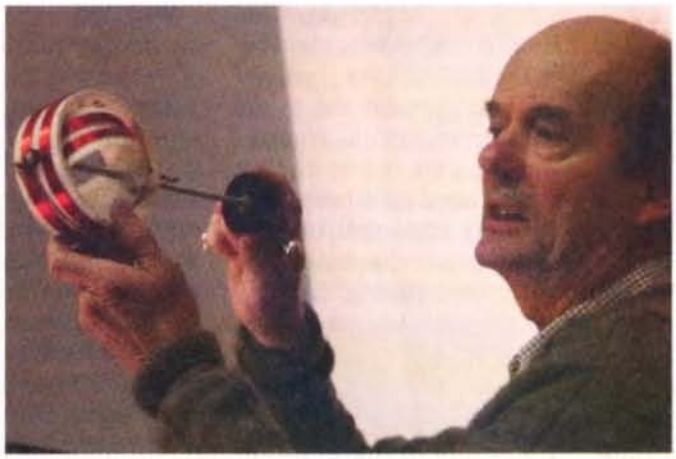
As the entire weekend was based in the Latrobe Valley, it is not surprising that the weekend concluded with two tours of industry in the local area.

First up was a tour of the Loy Yang A Power Station, conducted by PowerWorks. We all assembled at PowerWorks to receive a briefing – no cameras (including mobile phones!). So no photos for you to view!

Onto the buses and off to the power station. A briefing was given whilst en-route and then we saw the station up close. After obtaining ear plugs, we travelled up to the turbine and generator hall. I doubt that the guides have seen so many tour participants looking at the fine detail on the labels attached to the turbine and generator equipment!

As time was running short, we then departed for a quick tour of the Loy Yang open cut mine – the scale is massive. It was then a quick return to PowerWorks to jump into our vehicles to travel to Latrobe Regional Airport.

The Airport does not currently have



Drew Diamond VK3XU describes how his homebrewed variometer works to assist in tuning an electrically short length antenna for use on LF.

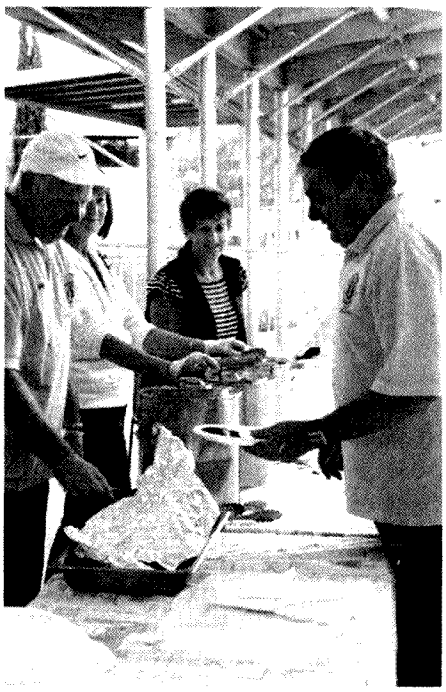


Part of the crowd at the Annual Dinner on Saturday evening.



In the development area at Gippsland Aeronautics, Aeronautical Engineer Ed O'Brien explains how the team are developing new applications using a belly pod that fits beneath the GA-8 Airvan.

any commercial passenger flights. One legacy from past activities is showing some continuing success, even if activity levels are down at present due to the global economic recession. A small local industry that started in aircraft maintenance has developed into a firm called Gippsland Aeronautics. The maintenance activities expanded into the production of a "crop dusting" aircraft.



The team from Churchill & District Lions Club, ready for the crowd to arrive for

With the experience gained from the design, construction and approval processes with this aircraft, the company went on to identify a market niche for an eight seat general light aviation craft – the GA-8 Airvan.

It has been very successful, being sold into many countries around the world. It may look basic, as the cabin is basically a box! However, this has many advantages, including internal space available for fit out with many different options. The company is also looking to the future, having acquired the rights to the Nomad aircraft – a design well respected around the world.

After a briefing, we were conducted around the production facility, seeing how the aircraft is produced from sheets of Duralium, precision cut, shaped, folded and riveted into subassemblies. Then the sub-assemblies are put together into a complete aircraft. Whilst some components, such as the engine and propeller, are sourced from overseas, most of the aircraft is manufactured on-site.

The weekend ended quietly, almost in a whimper, as people drove off as they finished the tour. I am aware that some gathered at a Chinese restaurant in Traralgon for a meal on Sunday evening, whilst others headed for home, either nearby or far afield.

Overall, everyone I spoke with on Sunday passed comment on how terrific the weekend had been – how much they had enjoyed the whole program. Several even said that they would be seeing me again in July for the main GippsTech conference.

In closing, I must thank everyone who made the weekend a success: all involved in making it happen, the presenters, the WIA staff and Board members, members of EZARC who assisted, Churchill Lions, LVAS, Alliance Catering, Century Inn, PowerWorks and Gippsland Aeronautics. And last but not least, all who attended – the best planned event will be a total flop if nobody attends!

I am sure that all involved directly in making it happen were feeling somewhat exhausted at the end of the weekend, but I certainly received good feedback to indicate that the entire weekend was well received.

I look forward to catching some of you again in July, for the usual annual GippsTech technical conference on July 11 and 12.

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The group loading up on the buses at PowerWorks, ready for the tour of the Loy Yang A power station.

"Hey, Old Timer..."



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Tim Mills VK2ZTM
C/- arnews@tpg.com.au

VK2

VK2 was honoured at the recent WIA AGM when Stan Bourke VK2EL was the recipient of the annual Ron Wilkinson Award.

Stan has had over 60 years in the hobby. In the mid 1950s Stan was the Treasurer of the NSW Division when the Dural property was purchased. Stan drove a hard bargain and extracted a good reduction in the asking price.

Stan was at many of the working bees to construct the VK2WI building and also provided the transmission facilities – from the boot of his car – for the first broadcast from the site. Stan has had an eventful life in electronics. For further details on the Award check the WIA news site.

Bob VK0BP has reported a good copy on the VK2WI Sunday news session via the 20 metre outlet -14.170 MHz - down at the Davis Base in the Antarctic. Bob included a good picture of the southern lights, taken while the broadcast was on. Callbacks are not normally taken by VK2WI on 20 metres due to a high noise level local to the site.

Reports from listeners within and beyond Australia are welcome and may be made by email to the news site arnews@tpg.com.au Mail to P.O. Box 6044 Dural Delivery Centre NSW 2158 or telephone the office 02 9651 1490.

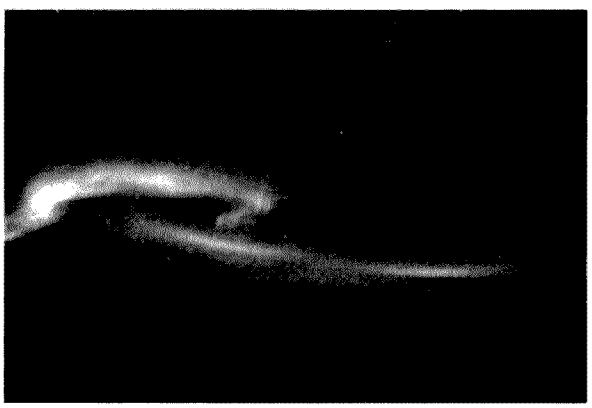
Bob's web site is www.vk0bp.org where you will find new photos. With winter fast approaching and less daylight, down to four hours in May, he reports vastly changing band conditions.

The **Oxley Region ARC** annual field day is being held in Port Macquarie on the Saturday afternoon and all Sunday of the June long weekend. The venue is the Sea Scouts Hall in Buller Street, the regular location in recent times. Fox hunts Saturday afternoon from 1500 hours and all of Sunday. On Saturday a new event, an all band scramble for 30 minutes from 1730 hours. This will be followed by an informal social evening at the Bowling Club. On Sunday, Traders and Disposal tables all day. The famous BBQ lunch for purchase. Tea and coffee free all day. Registration is $5. Presentation of prizes at 1530 hours.

Also attending the field day will be the **Mid North Coast Amateur Radio Group** where they will be exhibiting their range of kits for the amateur community along with demo units. They have also developed an impressive web site and recently added an automated radio prediction service. Check out www.mncarg.org

The **Blue Mountains ARC** annual Winterfest is scheduled for Sunday the 23rd of August. They recently held their AGM with Tim VK2XTT as President; Pascal VK2IHL as Vice President; Carl VK2HRC as Secretary and Treasurer is John VK2FSFC. Other committee members are Gunter VK2JAP, Alf VK2YAC and Richard VK2LET. Andrew VK2FACV looks after contests and the club magazine 'Ragchew'. Daniel VK2DC has Education and is also the Historian. Dennis VK2RM has HF nets and Steven VK2VSV has the Web. The club meets on the first Friday evening at Glenbrook.

A new group in southern Sydney is the **Hellenic Amateur Radio Association.** They meet on the first Tuesday evening at the St. George Sailing club, 2 Riverdale Drive, Sans Souci when they have their club rooms. Watch out for club call VK2CL. The website is www.haraoa.com President is Tommy VK2IR and Secretary Chris VK3FY. Telephone contact 0413 005 511 or 0419 155 139.



The view from Bob VK0BP's window

Usually in June the **Waverley ARS** have had their annual auction. They meet in a Scout hall in the Sydney eastern suburb of Rose Bay. There are now other users of the main hall and finding a slot has become difficult. This year it will be held on Saturday the 18th July. Doors open at 8.30 am for a 10 am start. The Society is currently celebrating their 90th year. A dinner is being planned. Check out details on their web site www.vk2bv.org

WICEN NSW is providing communications to the St. Albans Ride over the June long weekend. Next month is a busy time on 4th and 5th July with both the Northern Rivers Eden Creek Horse Enduro and the Wilderness Rescue Navigation Shield; the Shahzada Horse Enduro is over the week 17th to 21st August and the Hawkesbury Canoe Classic on the weekend 24th – 25th October.

WICEN provides communications assistance to the community. Contact them by mail to P. O. Box 126 Gosford NSW 2250; send email to operations@nsw.wicen.org.au telephone 0408-397-217 or visit www.nsw.wicen.org.au

The **Radio Homebrew and Experimenters Group** – a function of Amateur Radio NSW – meet on the first Tuesday evening at Putney; have a 2 metre and 80 metre net on the third Tuesday evening and a meeting and activities in the afternoon of Trash and Treasure day at VK2WI Dural, last Sunday of the odd numbered month. The next will be July 26th. Check out the ARNSW website for further details.

The **NSW Division** AGM was conducted in April with 42 members in attendance. Business was concluded in about three hours. Thirteen members contesting the nine positions. When these notes were prepared the majority of the incoming office bearers had not been announced.

The 'shed' development drags on with clarification of its final building code classification being determined. The intention was for it to be a simple 'storage' shed but the suggestion of 'a training facility' made it a whole new ball game. Hopefully, all will be resolved in time for the July T&T event.

73 – Tim VK2ZTM. **ar**

News from

VK3

Geelong Amateur Radio Club – GARC

Tony Collis VK3JGC

The New GARC Committee

From the AGM on the 3rd of April the following executive committee members were appointed:

President	Dallas Jones VK3DJ
Secretary	Tony Collis VK3JGC
Treasurer	Andre Walker VK3FASW

Additionally the Public Officer role was transferred from Barry VK3SY who has held this role for many years to Nick VK3TY. In line with the current constitution, two additional committee members were elected: Kevin VK3FKEV and Gary VK3FGWR.

The New GARC Infrastructure

A greater participation in club activities by the membership has been initiated by the President VK3DJ with the creation of twelve operational posts varying from Property Officer to Club Librarian. Each post has a principal member allocated with a back up member; this will ensure that all GARC club members will know where to direct themselves on club related matters.

IRLP (node 6572) at 145.475 MHz

The GARC is pleased to announce that through the tireless efforts of Nick VK3TY, the GARC now has an IRLP facility to offer the Geelong area. The IRLP node, number 6572, can be found at 145.475 MHz and operates in simplex mode as VK3ATL. The transmitter power output is somewhat QRP at 8 watts but has been successfully used by club members some 160 times in the first couple of weeks on air. The system is operational, with thanks to Nick, 7 by 24. Within the next few months it is planned that the IRLP node will be installed at the GARC repeater station VK3RGC on 147.125 MHz, which will afford it a much wider geographic coverage.

New Licences

Two new licences have been awarded to club members; Craig goes from an F call to VK3VCB and Arthur jumps straight into VK3LAD, our congratulations to them both. Owen VK3OWZ, GARC's training officer, assisted by Peter VK3ZAV and Peter VK3KP, has initiated an Advanced Training Course for club members based on the Radio Electronics School (RES) Advanced Course; special thanks to Ron Bertrand, manager of RES, for his kind cooperation in the provision of Advanced Course material.

Repeaters and Beacons

All the GARC beacons and repeaters are operational, with thanks to the efforts of Ken VK3NW.

Museums on Air

At this juncture it looks like the GARC will have at least two stations on air for the 20th and 21st of June operating from Queenscliff and North Geelong.

The GARC Solstice Dinner

This is being arranged by Barry VK3SY on the 26th of June at the club house in Storrer Street, East Geelong, and will be the same social format as previous years where members bring along wives and partners; food and drink contributions will be provided by the club members. Invitations have been extended by the GARC to other clubs to join us on the day.

Talks and Presentations

The syllabus up to the end of July is established and can be found at www.vk3atl.org under the heading of Upcoming events. The club meets at the Storrer Street address from 6.30 pm onwards with Syllabus activities starting at 8 pm.

Gippsland Gate Radio & Electronics Club

The Gippsland Gate Radio & Electronics Club members announce that on the 18th July 2009 they will be conducting their Hamfest Sale at the **Cranbourne Community Hall** on the corner of **Clarendon** and **High Streets, Cranbourne**. High Street is part of the South Gippsland Highway. Melway 133 K4.

Forty tables of goods will be presented at this large venue, but stall holders should book early as demand is always high. Reservations for stall holders may be made by contacting **Dianne Jackson VK3JDI** on **(03) 5625 2545** or hamfest@ggrec.org.au

Tables will be available for $20 each. Doors open at 8:30 am for stall holders and at 10:00 am for buyers. Your entry fee of $6 will go towards the continued upgrading of facilities at our Club shack and meeting room in Cranbourne. Take away food, plus free tea and coffee will be available. The entry fee includes a ticket in the Door Prize which will be drawn around 1:00 pm for all who register upon entry. Great prizes to be won as usual. Additional tickets can be purchased on the day.

VK2 continued from page 31

Twin Cities Radio and Electronics Club

Peter VK2CIM

The annual Riverina Field day hosted by the Twin Cities Radio and Electronics Club Inc. is being held at Murray High School assembly hall on Sunday the 26th July 2009, on the corner of Kaitlers Road and Kemp Street, Lavington. Opening time is 10 am. stall holders 7 am.

Closing time is 1 pm. Tea and Coffee will be free to everyone.

There are reasonable motels located nearby and in Albury and Wodonga for those who wish to spend a weekend with us. On Saturday evening some club members will be having an informal dinner at the Albury Commercial Club Bistro where the prices are reasonable.

Contact Tom VKMY: sanders_01@bigpond.com Phone: 02 6026 2260 Mobile: 0417 546 695
Local repeater 147.000 negative offset or simplex 146.500: club call VK2EWC
Peter Presutti VK2CIM E. vk2cim@wia.org.au Mobile: 0417 441 137

Eastern Zone Amateur Radio Club News

Chris Morley VK3CJK

WIA AGM weekend of activities

The start of May was busy for Club members: as you will almost certainly see elsewhere in this issue of *AR*, the Club hosted the WIA Annual General Meeting and ran an extra conference event as a feature of the weekend of activities.

Over 100 people attended, with around 80 attending each session on Friday evening and Saturday. A smaller number attended on Sunday morning, with numbers dropping off further for the Sunday afternoon tours, which was understandable as many had long distances to travel home.

Some aspects of the organisation of the activities were easier for the Club, as registration was arranged through the WIA. The Club was responsible for the GippsTech – Special Event activities over the weekend, including providing the tea and coffee on Saturday and Sunday.

The Club also ran a raffle, with Nick VK3VFO and Glenn VK3SI selling tickets during Friday evening and Saturday morning. The prizes were drawn following the afternoon tea break in the WIA Open Forum.

The Club thanks the companies that supported the raffle by donating prizes. The prizes and winners were:

Yaesu VX-8 handheld transceiver (donated by Vertex-Standard Australia): Justin Giles-Clark VK7TW.

Icom $100 redemption voucher (Icom Australia): Glenn VK3SI.

Books from the WIA Bookshop (WIA): Guy VK2KU, Judy VK2HZV.

144 MHz stainless steel 5/8 whip antenna (G&C Communications): Nick VK3VFO.

In addition, several amateurs received small collections of items from Icom Australia, including an Icom mug – just perfect for that favourite hot brew.

Our thanks go to Cameron VK3FZAT and Callum VK3FSDP, two young amateurs who attended the events, and were asked to draw the lucky tickets.

May Club meeting

On the Thursday following the WIA AGM event, the Club held its regular monthly meeting. The focus for the night was an introduction to Digital Communications, presented by Peter VK3KAI.

Members had previously requested the topic, so the Club purchased an interface kit from the Mid North Coast Amateur Radio Club. Peter assembled the kit up to the testing stage prior to the meeting.

At the meeting, the requirements to be met by an interface were discussed, including the required cabling to connect to your PC and transceiver. Referring to the manual for the transceiver, a cable was prepared in front of the audience.

Peter then fired up a laptop PC and loaded the *fldigi* software package. Everything was connected together via the interface, together with a mobile whip antenna on a vehicle outside the venue, the reward was some weak PSK signals on 20 m being easily decoded.

No attempt was made to transmit, as the appropriate checks had not been made. We then checked the software on CW, by listening to our local 144.434 MHz beacon, again on the 20 m mobile whip. The software worked perfectly.

Many questions were answered and everyone indicated that the activity had been worthwhile.

Training event

We will be running a Foundation training and assessment event on the weekend of June 13 and 14. Other assessments are available on Sunday, if booked in advance.

Register for the event by email to vk3bez@vk3bez.org Be sure to clearly indicate which assessment you wish to attempt. Registrations need to be submitted by 1 June 2009.

GippsTech

The Club is now busily preparing for the real GippsTech event, to be held at Churchill on the weekend of 11 and 12 July. Booking details should by now be available at the Club website – just follow the GippsTech links: http://www.vk3bez.org/

The program is starting to shape up. As usual, a variety of topics will be covered, from a simple USB interface to control your radio, through to modelling transmission lines constructed from square section tubing, and a direct conversion, phasing type transceiver for 144 MHz.

Doug VK3UM will present some observations on the communications and other matters during the 2009 Kinglake-Murrindindi complex fires, a period when he was sitting in the middle of it all!

Andrew VK3OE will tell us all about getting a radio mast legally installed and how to safely use it. More details will be available soon from the website. Other amateurs are sure to offer topics in the next week or two.

We look forward to seeing many familiar and some new faces at Churchill in July. Remember, a key part of the weekend is the stimulating discussions which occur outside the formal presentation sessions. **ar**

Amateur Radio

Is the voice of amateur radio in Australia

Do you have something to say about amateur radio?

If so, contact the Editor Peter Freeman VK3KAI editor-armag@wia.org.au in the first instance for all the details of how to get into print.

News from

QTC VK4

First Published July 1927 "Of, By and For the Amateur"

News from for Queensland Radio Amateurs

Christopher Comollattle VK4VKR
Email: vk4vkr@wia.org.au qtc@wia.org.au

CLAIRVIEW

What a weekend at Clairview! Amateurs from all over the place came along for a great weekend.

If you were not there, you missed out on a good chin wag session, monster plus auction and a raffle that almost never ended. The weekend was enjoyed by all and some even stayed for a few extra days.

TARC

Townsville Amateur Radio Club have drawn their raffle prize. The raffle winner was Myrtle Ellis of Rosslea. The seller of the winning ticket was Evie VK4EQ,

Myrtle's neighbour. Ray VK4NET presented the prize to Myrtle on Thursday April 9th. Myrtle reckoned she was over the moon as she had not previously won a raffle prize.

RADAR

Rockhampton and District Amateur Radio Club Inc. (RADAR) proudly announces its first big raffle in a long time – the RADAR Radio Raffle with a brand new Yaesu FT-1802M 2 m 50 W Mobile Transceiver donated by Jack Chomley VK4JRC (Thanks Jack). It is new in box with full warranty.

Tickets are two dollars each, with a maximum of 500 to be sold, so get in quick and don't miss out! The raffle will be drawn on 15th July 2009 at the RADAR Club Meeting. Books of tickets can be sent to other clubs if interested.

Contact RADAR Secretary Clive VK4ACC if you cannot make it to a RADAR meeting and he will arrange some tickets for you!

WICEN NET

WICEN Queensland holds a net every Sunday on 7075 kHz from 0830 am (2230 UTC).The net calls in regular stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3600 kHz. Mix it with other WICEN ops and call in on the net.



The auctioneers VK4RM, VK4ACC VK4YLW and VK4FW

CHARC

Central Highlands Amateur Radio Club welcome the first edition of the CHARC News. Good luck guys and keep us informed with stories and upcoming events.

CHARC IRLP Node # 6037
Committee members for 2008/2009
President: Steve Wood VK4SMW
Vice President: Mark Robinson VK4KMR
Treasurer/Secretary: Gordon Loveday VK4KAL & Dorothy Loveday
Committee Members: Roy Moore VK4RM, Harry Cox VK4LE, Robert Waegele VK4 TWR.
Publicity Officer: Helen Wood
Technical Officer: Steve Wood VK4SMW
Club mailing address: Central Highlands Amateur Radio Club
C/- Aviemore, Rubyvale QLD 4702
Contacts: Gordon VK4KAL on 07 4985 4168 or Steve VK4SMW on 07 4982 7459 OR 0418 879 248

Individual club membership $20/year. Couple or dual membership $25/year

Please note that the CHARC AGM is held in September.

Happy birthday to Steve VK4SMW, who was given a birthday cake in the shape of a radio with his callsign on the radio's main display.

BAYSIDE DISTRICT AMATEUR SOCIETY

VK4BAR 80 metre net on Wednesday's 3.567 MHz at 1930, 2 metre net on club repeater Monday 1930 146.875 MHz, except the first Monday when they hold the general meeting.

MACKAY AMATEUR RADIO

Want to help out? Mackay Amateur Radio Association Inc needs you! Contact co-ordinator George Adams VK4HAN 0413289220 for details on the MDTERHC Endurance Ride - Denison Ck Station Sat 6, Sun 7, Mon 8, June, Sat 11, Sun 12 July, Fri 7, Sat 8 and Sun 9 Aug.

SCARC

SCARC has had a busy month; it started with the club AGM, where a few new faces were elected to the Executive committee. The final outcome was President, Noel VK4NL, Vice President, Wayne VK4WS, Secretary, Gordon VK4VP, Treasurer, Keith VK4AKA, Committee members Mike VK4YFL, Richard VK4YRP, Harvey VK4AHW, and Warwick VK4NW.

At the AGM members voted on a recipient for the "Col McCamley Award" given each year to a person who has given outstanding service to the club, this year it was awarded to Noel VK4NL a very worthy recipient.

The club's WICEN-SES special communications group went to standby as Cyclone Hamish came down the East Coast. Members made the communications caravan ready to be relocated should it be needed. The WICEN group could be heard checking their message handling skills and procedures on their weekly net, it was with relief for all when Hamish moved away and they were stood down.

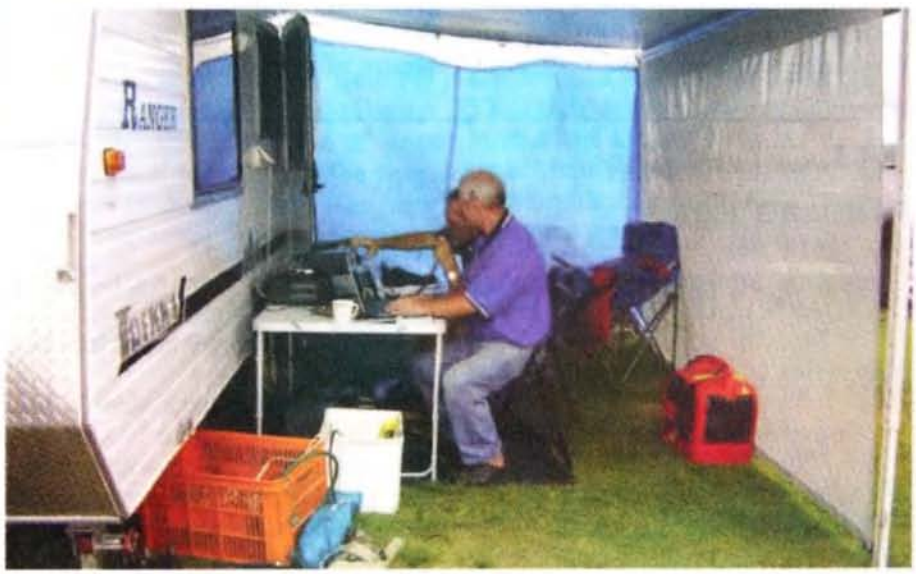
The club entered a team in the John Moyle Memorial National Field Day contest led by Bernie VK4KAC. As the communications caravan was stood down on the Thursday night, it was relocated to Howells Knob near Maleny on Friday for the weekend, along with the Maleny SES communications caravan and two other vans.

The contest team put in a good effort over the weekend on all bands, with a good time being had by all. The participants were Bernie VK4KAC, Harvey VK4AHW, Bill VK4WB, Richard VK4YRP, Wayne VK4WS, John VK4JMC, Harry VK4TK and Toby. As Richard VK4YRP arrived home on the Sunday evening with the communications caravan, he was called out to assist with the oil spill cleanup on the Sunshine Coast, so after a quick cup of tea, it was off to Kawana to locate the caravan on site, ready for operations the next day.

Continued next page



Bill VK4WB



Bernie VK4KAC and David VK4JMR



SCARC SES van

News from

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The April meeting introduced us to the future. Leigh VK5KLT gave us a talk about RFID.

We all know the bar codes used so universally to identify items, whether they are in the supermarket or the radio parts store. In the future we will probably become just as used to RFID tags. RFID tags are read by RF readers rather than laser-light readers but they are much more versatile. RFID tags can be invisible to the naked eye, they can be bent or deformed and still be readable. Leigh has been working in this field for many years and has helped to expand the use and usefulness of RFID into many industries.

We will find, in the future, that the whole 'life cycle' of an article will be tracked as it moves from place to place and owner to owner. One of the most recent investigations has been into the possibility of printing with an inkjet type printer, using inks with an RFID in it. It has been done but is not yet practical on a large scale.

AHARS ran a successful assessment weekend with passes achieved in upgrade tests as well as several Foundation candidates. If you are interested in sitting for a future assessment, please contact Sasi VK5SN QRZ the callbook.

Meetings of the AHARS are held on the third Thursday of the month at the Blackwood Community Centre as usual and all visitors are welcome.

ar

VK4 *continued from page 35*

FNNQARG 2009

The 26th Far North and North Queensland Amateur Radio Gathering (FNNQARG!) takes place from Friday 5th to Monday 8th June at Cardwell Village Beachcomber Motel and Tourist Park.

Campsites, Caravan sites, Motel rooms, Villas and Cottages are going fast and Management advises that these will be booked out pretty quickly during the next month or so. If you have not already booked your accommodation then you need to get cracking!

Contact the Cardwell Village Beachcomber Motel and Tourist Park now to make your booking on telephone 1800 005633.

Some activities have already been planned with the famous NQ vs. FNQ Cricket Match complete with impartial umpire flying in from overseas, the mighty TREC Trivia Challenge (do not forget your clipboard) technical demonstrations, participation in the VK Shires Contest activating the Cassowary Coast and tours of the local Telegraph Museum.

Time to book for FNNQARG!

Those not planning to go to FNNQARG this year from the Townsville Region should seriously consider helping out with communications for either the Mount Stuart Tarmac Rally Sprint or the Strand Mini Swim instead of gathering dust and girth at home during the June Long Weekend.

VK4 REGIONAL HF Nets

Monday Evening - Mackay Club Net - VK4WIM Net Control – 3597 kHz from 0930 Z

Tuesday Evening - RADAR Net - VK4WIR Net Control - 3613kHz from 0930 Z

Wednesday Evening - Gold Coast Net - VK4WIG Net Control – 3605 kHz from 0930 Z

Thursday Evening - Henry Fulford Memorial Net - VK4WAT Net Control – 3588 kHz from 0930 Z

Thursday Evening - Sunshine Coast Net - VK4WIS Net Control – 3660 kHz from 0930 Z

Thursday Evening - Hervey Bay Net - VK4CHB Net Control – 3615 kHz from 0730 Z

Friday Evening - Central Highlands Club Net - VK4WCH Net Control – 3618 kHz from 1000 Z

Friday Evening - Lockyer Valley Club Net - VK4WIL Net Control – 3570 kHz from 0930 Z

Saturday Evening - Darling Downs Net - VK4WID Net Control – 3587 kHz from 0930 Z

Sunday Morning - WICEN QLD Net - VK4IQ Net Control – 7075 kHz from 2230 Z

Sunday Evening - North Queensland Net - VK4WIT Net Control - 3605.4 kHz from 0930 Z

Sunday Evening - Dalby and Districts Net - VK4??? Net Control - 3585 kHz from 1000 Z

Christine Taylor VK5CTY

The Annual General Meeting

As usual we had a great roll up for the AGM, held on the first Monday of May. Propagation was good and 19 stations were heard, most of them heard by everyone, wherever they were located.

ALARA has a number of new faces in committee positions.

Tina VK5TMC is now President, Lesley VK5HLS is first Vice President and Shirley is second Vice President.

We have a new Secretary, Marisa VK4FMAR, a new Publicity Officer, Aysha VK5FASH, a new Historian, Sue VK5AYL and Lesley VK5HLS has volunteered to take over as Contest Manager.

After 27 years in various capacities, Marilyn VK3DMS retires from the ALARA committee. We wish her a well-earned rest, though no doubt she will still be active for ALARA as well as in many other fields.

The outgoing committee was thanked for its effort and the new committee welcomed.

Impending visit to Dayton

Tina, our new President, and her OM Robert VK5ZHW are going to the monster Hamfest in Dayton Ohio this year especially to make a presentation at a YL Forum there, to talk about ALARA and the YL International Meet we are planning to hold in Adelaide in 2012.

Unfortunately, Tina will not be appearing at her very best as she managed to break one ankle and sprain the other, a couple of weeks before Easter.

With permission to travel from her doctor she is looking forward to Dayton very much even if she has to wear a 'moon boot' for some of the time. There will be many readers who have had to wear moon boots so they will sympathise!

We wish her well and look forward to hearing all about it when she returns.



YLs at the WIA AGM: Jeanne VK5JQ, Jenny VK5ANW, Ros VK2FROS, Margaret from the WIA office, Lia VK3LPH, Margaret VK3FMAB, Meg VK5YG, Christine VK5CTY, Jenny VK5FJAY, and Jean VK3VIP with Lyn from VK2 on the end.

Visitors to Bendigo

From Jenny VK5ANW:

"On Saturday 11th April 2009 Pam VK3NK and Jenny travelled to Bendigo with their respective OMs Graeme VK3NE and Peter VK3RV to enjoy the many activities of the Bendigo Easter Festival.

One of the activities was a display of amateur radio by the Midland ARC. The same venue also had a display of historic radios and an astronomy display.

Two of the YL Midland club members are Monica VK3FMON and Heidi VK3FHID. It was good to catch up with Monica and to meet Heidi for the first time. Monica is the XYL of the Midland Club President Kevin VK3CKC, and was taking the entrance fee at the door".

ALARA at the WIA AGM

This year there were thirteen ALARA members at the AGM but they were not all together at one time for a group photo, however.

Only VK3 and VK5 were represented this year, with Jean VK3VIP, Margaret VK3FMAB, Margaret and Dianne VK3FDIZ from the WIA office, Monica VK3FMON, and Lia VK3LPH.

From VK5, there were five more, Meg VK5YG, Leanne VK5JQ, Jenny VK5ANW, Jenny VK5FJAY and Christine VK5CTY.

The program arranged by the WIA was very interesting and the event was enjoyed by all who attended.

Remember, next year is the Centenary of the WIA, so we can expect an even better AGM weekend.

A personal comment and sign off

May I wish the new ALARA correspondent all the best? It seemed a good time for a new voice for ALARA. Thanks to all those who have read my items over the years I have been writing the column.

73, Christine VK5CTY

ar

News from

Keith Bainbridge VK6RK

VK6

Yet another month has passed and still no sign of a new Sunspot cycle! The DXers in the state are getting restless, as I can confirm after chatting to NCRG members every Sunday morning. Surely something must happen soon!

In desperation some are looking at alternative sources of DX. Satellites still have no High Earth orbiter so they are out, but what about moonbounce?

Your scribe has decided that it has to be given a try so a 2.5 metre dish is about to perch on the AZ/EL rotators and a 300 watt amplifier is under construction for 1296 MHz; look out Moon!

First off this month is news from Dennis VK6KAD.

WARG News

If you are coming to VK6 by road, then unless you come via the Kimberley you must pass Kalgoorlie-Boulder. Kalgoorlie used to have a 2 metre repeater, popular with travellers on the train and those driving west. It was the first repeater after the Nullabor, and the last before the Nullabor. Sadly, the number of hams in the area declined, the repeater was sabotaged, and fell into disuse.

It is back! With a rise in the number of active hams in the area, VK6RAK has been reactivated. It is on 147.000 MHz with an input on 146.400 MHz. The antenna is at 9 metres, in Boulder, and the coverage is not yet fully plotted. A better location is being investigated. Already the repeater has been used by travellers on the Indian Pacific. It is not yet linked to IRLP or Echolink, but they are looking at it up there in the Goldfields.

Geraldton is on EchoLink. The EchoLink node is now permanently up and running and has the following details: Link node ID - VK6KCI-L, EchoLink Node Number 412591, location 28' 42.276'S, 114' 37.733"E, frequency 145.350 MHz (simplex), TX Power 44 dBm (25 W), antenna, omnidirectional +6 dBi at 16 m AMSL. Coverage is mostly reliable throughout Geraldton city and suburbs, to a radius of approximately 15 km with the 25 W TX and RX sensitivity is < 0.2uV at 12 dB SINAD. Coastal coverage is north to Horrocks Beach and south to Cape Burney. Node control via DTMF - connect by dialling node number - disconnect by dialling *9. Please note: Node may be connected to a conference server. If so, please check to ensure no local stations are using the link before dialling 9 to disconnect all stations. Please re-connect any conference servers after use.

I have also heard, but not officially, that the Bunbury 70 cm repeater is up and running, making two 70 cm repeaters in the bush!

VK6RCW, the VHF Morse training beacon in Perth has been fixed and returned to service. It is on 147.375 MHz. It has several pages of text, and transmits at various speeds within any one hour period. The speeds start at 3 wpm and work their way up. Between texts, the beacon identifies at 18 wpm. The program selects a block of text, randomly chooses the tone to be used, and sends it. Note that if the power goes off, the send reverts to 3 wpm on restart, so the hour period may not start at the top of an hour. Repairs were carried out by VK6HAM Tony, and VK6KAD Dennis. See the website http://www.vk6.net/vk6rcw.html or Google VK6RCW for information.

73 Dennis J Muldownie VK6KAD vk6kad@iinet.net.au

NCRG

At the last NCRG meeting we were happy to have a visit from Bob VK6POP, the new WIA Director, even more so when he presented yours truly with a cheque for $1000 towards the VK6-ZS 2 metre Beacon project. We were one of the lucky groups who were allocated a grant in the last round. Submissions for this year's grants are now due so good luck to those applying.

The project is progressing well with the antennas now designed and under construction, the position of the tower that they will end up on sorted out and a PC, radio and some software sorted out ready to get this Beacon on the road. WIA TAC has approved the frequency of 144.950 MHz as the TX frequency and a callsign VK6RIO, Indian Ocean, has been applied for. Hopefully we will have a basic setup on the air before August and the full WSJT keying working not too long after that.

The NCRG also had a visit from Ernie VK3FM from the Publications Committee and my contact for these notes. He was suitably impressed with the set up at Whiteman Park and suggested a detailed article needed to be written on the Club; we will see!

The one problem we have there is a lack of Internet access. We are a long way from a phone line so wireless linking was discussed. This resulted in a dish being placed on top of one tower, with John VK6JX balanced up there, while other club members headed to another QTH to try to set up the other end of the link. A few disasters followed but a partial link was established. Much more work needed it seems.

Finally from me, I have a new callsign. When I arrived from the UK in 1987 I was given the call VK6BRK, my initials in the wrong order. It was not a good call on CW so I changed in 1989 to VK6XH. Recently I noticed VK6RK was free so I have changed. I still hold VK6XH as it is paid up for four and a half years but RK will be my preferred call from now on. Look for me on 1296 MHz moonbounce soon!

Peel Amateur Radio Group

A little about us – the Peel Amateur Radio Group was formed in 1982 to serve the needs of amateur radio and electronic enthusiasts. PARG covers an area from Kwinana through to Waroona in the south, incorporating the cities of Rockingham and Mandurah. We are only a small club, but wishing to encourage new and old amateurs in helping put VK6 on the map. Yes we are here to stay!

continued on page 40

Peter Blackadder VK8HPB

VK8

John Moyle Field Day – Top End Style

On the Friday afternoon Terry VK8TA picked up Peter VK8HPB from his QTH and, after loading some extra gear, proceeded to Mount Bundy station where we were going to operate for the John Moyle contest. No it is not a site relating to Bundy Rum!*

Mount Bundy station is situated about an hour and a half by road south of Darwin on the Adelaide River. It was a large cattle property but they have diversified into tourism to give southerners a taste of cattle station life. The buildings are all aptly named e.g. Billabong House (cause it is next to the billabong, where we operated from), Cooks Quarters and so forth.



Not exactly roughing it at Billabong house

The owners Scott and Sue operate a small stable of horses for clients to ride and they will also teach you to ride if you cannot. They also conduct a one day trail ride through the hills around Adelaide River: a very interesting ride with magnificent views and scenery. Well worth the effort. The costs are reasonable to stay there and there is also a camp ground for those more adventurous souls who would prefer to "rough it".

We arrived there around 5.30 pm travelling through a torrential tropical downpour and were met by Sue the station manager who showed us around. Trevor VK8TJW and his mate Ray arrived later and helped unload the gear and set up the station.

As we had been there previously, we knew where we wanted to site the antennas but due to the lateness of the day decided to run the genny as it was new and set up a 2 m Slim Jim. So we set about the task with Gusto (dunno where he came from but he was welcome).

Saturday looked promising with not a cloud in sight so no rain ... maybe. Before breakfast Terry realized he did not have any milk for his Weet-Bix and with Peter not feeling the best, we went to town to find a clinic and some milk. Peter was given some medicine by the Adelaide River Health Clinic nurse and with instructions to take it easy, yeah right! We have a contest to run, so off to the Station for set up and contest.

Plan A was to set up single band dipoles and have several different bands operating at the same time. We quickly reverted to Plan B or, as time means contacts or loss of, Peter quickly erected a 20 m dipole and started to call VK8DA/ portable Mount Bundy. The numbers started to roll in. Terry slowly started to erect the 80/40 m dipole but had to wait for assistance to erect the Clark mast.

Gary VK8BN and Wendy his XYL arrived, Gary assisted Terry to erect the 80 m antenna, Wendy made sandwiches for lunch. They then moved onto erecting the 15 m dipole. As they were completing that job Richie VK8RR and Paula his XYL arrived and Richie assisted with erecting the 15 m dipole.

Around 1300 Ron VK8NRI and Dan VK8AN arrived and quickly set up the 80 m and 40 m station but as there was no propagation in our area we waited to the evening to try again.

Late afternoon the sky became a little dark with some rumbling in the distance signalling a storm, so we kept an eye on it and kept operating. It did eventuate into a small storm which moved around us, but we did get some rain on and off into the night.

We operated into the night but lack of propagation on 80 m and 40 m and interference from our northern neighbours curtailed our activities, so we called it quits around 9 pm with a vow to get up early and try again.

Sunday morning looked bright and clear with no hint of storm clouds. Peter started the Honda and connected the 80/40 m dipole to try for some contacts. Slowly the contacts were made, some on 40 m, some 80 m, so we had some propagation. The others awoke, went into operating mode and started calling.

We tried to call into VK8DA after the WIA broadcast and were surprised we made it. We aroused some interest as we made several contacts with some VK8s.

But good things must come to an end and so we signed off on the last contact and vowed to do it again next year.

It was a good venue with low noise and a large area to erect antennas but a bit disappointing as we did not make as many contacts as last year. More planning is needed on what gear to take, what antennas to erect, and so on.

I would like to say thanks to Terry VK8TA, as this was Terry's last John Moyle Field Day. Terry was the driving force behind getting the Darwin Club into operating portable for the John Moyle Field Day for several years. He also supplied some of the antennas, radios, a generator, coax and all the bits and pieces that go together to make a successful operation. Thanks Terry: we will be lost next year without you.

Thanks to Ron VK8NRI and Dan VK8AN for assisting in the operation of the station for this year's contest.

Thanks to the organisers of this year's event and to those we made contact with we will see you next year. Listen out for VK8DA/portable from....who knows where??? (watch this space).

Cheers and 73 Peter VK8HPB

ar

*Editors note: Interestingly, while denying the Bundy Rum connection, Rum Jungle is 'just up the road'.

The original 'Mt Bundey' station was 1.1 million acres or more than 17,000 square miles, about 2/3 the size of Tasmania or bigger than The Netherlands. The name lost its 'e', changing to Mt Bundy for the camp section when the station was broken up.

VK6 *continued from page 38*—**PARG**

PARG – and the JMMNFD

On the Friday afternoon/evening of 13 March, Warren VK6MOD, Michelle VK6FMOZ, PARG President Wayne VK6FBLU and Joanne VK6FJPB met at the Alcoa Lookout in Pinjarra to start setting up for the John Moyle weekend. Once the SES van and the camper van were set up it was time to eat. The wind decided to visit with vengeance so out came the winter wear. Warren entertained the rest of us while putting the coax together for the next day.

On Saturday the day started off windy and cold. This did not dampen our spirits at all. Terry VK6TTF and Gavin VK6VKS were the first to arrive, and got us all out of bed to start the competition activities. Rex VK6SN and Maureen were soon to arrive. Warren assured us all that the wind would die down by lunch (and so it did - good on you Warren).

Next came the fun bit putting up the antennas; the frequencies were 70 cm, 2 metres, 6 metres, 80 metres, 40 metres and 20 metres. We all spent the rest of the day taking turns on the radios making contacts and having a lot of fun. We newbies had the pleasure of learning from the oldies how to do this. It took a lot of nerve for us to be involved, with good results. With visitors coming and going all day long it was a very positive experience.

PARG is relatively new at participating in field days, and we actively encourage new membership so that we can become bigger and better in future field days. We welcome all visitors and readily assist anyone to obtain their amateur licence. We meet every second Monday of every month, 1930 at SES HQ, Park Rd, Mandurah.

Contributed by Michelle VK6FMOZ.

Thanks Michelle for an interesting presentation, good luck and I hope to hear more of the Peel Groups activities in the future.

That's all folks.73 from still sunny Perth.

Keith VK6RK **ar**



What the John Moyle is all about: camping and contacts



Contests

Phil Smeaton VK4BAA

Contest Calendar for June 2009 – August 2009

June	6/7	IARU Region 1 Field Day	CW
	6/7	VK Shires Contest	SSB
	13/14	ANARTS WW RTTY	Digital
	13	Asia / Pacific Sprint	SSB
	20/21	All Asia DX	CW
	20/21	Winter VHF/UHF Field Day	All modes
	27/28	Marconi Memorial Contest	CW
	27/28	ARRL Field Day	All
July	1	Canada Day Contest	CW/SSB
	11/12	IARU HF Championship	CW
	12 (TBC)	Jack Files Memorial Contest	CW/SSB
	18/19	CQWW VHF Contest	All modes
	19	VK/trans-Tasman 160 Metres CW Contest	CW
	25	Waitakere (NZART) Sprint	SSB
	25/26	RSGB IOTA Contest	CW/SSB
August	2	TARA Grid Dip	PSK/RTTY
	2	Waitakere (NZART) Sprint	CW
	2/3	10-10 International QSO Party	SSB
	9/10	Worked All Europe	CW
	16/17	Remembrance Day Contest	CW/SSB/FM
	16/17	Keymen's Club of Japan Contest	CW
	30/31	ALARA Contest	CW/SSB

Welcome to this month's Contest Column.
A bit of a short one this month – work getting in the way of the more important things in life!

What *are* you talking about?

As with most hobbies and pastimes, we tend to get caught up with jargon and our own language at times. By way of clarification, over the page is a list of terms commonly encountered during discussions about contests or contesting.

It has been laid out so that you can photocopy it and add it to the shack notice board, more commonly known as the wall.

text continued foot of page 43

VK Entries for CQ WPX SSB 2009

No claimed scores for the contest are available as yet (at the time of typing this lot in anyway) so I will publish them as and when I get my hands on them. The following VK stations have submitted a log for the contest – hotly contested as usual!

Callsign	Operator	Transmitter	Band	Power	Assisted
VK6ANC	MULTI-OP	ONE	ALL	HIGH	ASSISTED
VK6AHR	MULTI-OP	ONE	ALL	HIGH	ASSISTED
VK4KW	MULTI-OP	TWO	ALL	HIGH	ASSISTED
VK1MJ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK2CA	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2HBG	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2KDP	SINGLE-OP	ONE	ALL	QRP	ASSISTED
VK2KRM	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2LET	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3ALZ	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3AVV	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3IO	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3NI	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3TZ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3VTH	SINGLE-OP	ONE	20M	LOW	NON-ASSISTED

Callsign	Operator	Transmitter	Band	Power	Assisted
VK3YXC	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3ZGP	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3ZPF	SINGLE-OP	ONE	20M	LOW	NON-ASSISTED
VK4ATH	SINGLE-OP	ONE	ALL	QRP	NON-ASSISTED
VK4BL	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4EJ	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4HG	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK4VDX	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4XES	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4ZD	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK5HRT	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK5NPR	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK7ZE	SINGLE-OP	ONE	20M	HIGH	NON-ASSISTED
VK8HPB	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED

Contests — What ARE you talking about

a list of terms commonly encountered during discussions about contests or contesting.

10 minute rule – refers to a limit on the number of band changes permitted in an hour or how long a station is required to operate on a band after making a band change

3830 – the Web site for reporting claimed scores after the contest

Alligator – a station whose signal is loud, but can not hear calling stations well. I think that this stems from old CB lingo – but I could be wrong

Assisted – the category in which it is allowed to use information from outside the station boundary about the operation of other stations; "assisted" has nothing to do with the actions of others that may assist the station or the operator

Band change – making a QSO on a different band than the preceding QSO

BIP/BOP – "Both In Phase / Both Out of Phase" referring to the phasing of signals to two antennas in a stack

Bonus – extra points added to a score for making a specific type of QSO or for contacting specific stations

Breakdown – a table showing the QSOs and multipliers worked on each band; also known as "hour-by-hour" or "band-by-band" or "HHBB" tables or sheets. It can also describe the operator when the results for a particular contest of interest are published and the penny drops that 10 m really was wide-open for the whole contest!

Busted – a spot, call, or exchange that is determined to have been copied or logged incorrectly

Cabrillo – a log file format specification

Checklog – submitted logs that are only used in the log checking process and are not listed in the results

Cheerleading – spotting one or a few stations disproportionately, usually a club member or a friend

Club circle – a circle of a given radius that defines the maximum area for a contest club category

Cut Numbers – letter abbreviations for Morse numerals, such as **N** for 9, **A** for 1, etc.

DQ – disqualify as a result of rules violations

Dupe – a station that has been worked before and can not be contacted again for point credit

DX alerting assistance – any source of information that provides call signs, frequencies, and time of operation (such as a DX spot or local voice net)

Error rate – the total of QSOs determined to be invalid as a percentage of the total QSOs in a checked log less all duplicate contacts

Exchange – the information required to be exchanged in a contest QSO

Fill – repeat part of an exchange to replace missing or garbled information

Grid circling – the practice of rover stations meeting at the corner of four grid squares and working each other on multiple bands in rapid succession

Grid square (locator) – the identifiers of the Maidenhead Grid Locator system

Hired gun – a guest operator, usually referring to someone highly skilled

Hold – in reference to a frequency, to maintain a presence on a frequency by calling CQ

LCR – Log Checking Report, the output of the log checking process for a submitted log

MO, MS, MM, M2 – Multi-Operator, Multi-Operator Single-Transmitter, Multi-Operator Multi-Transmitter, Multi-Operator Two-Transmitter

Move – in reference to station that counts as a multiplier, to coordinate a change to another band to contact them for additional multiplier credit

Multiplier (Mult) – special attributes, such as locations, which are multiplied with QSO points to determine score

Not In the Log (NIL) – a QSO that can not be cross-referenced to the submitted log of the station with which the QSO is claimed

Off-time – enforced periods of non-operation during a contest

Packet cluster (or packet) – originally a program written by AK1A (PacketCluster™) to allow DX and contest stations to share information (spots) via VHF packet radio systems about stations on the air, now generally refers to any source of spots, whether over the air or terrestrial networks

Pass – at a multioperator station, ask a calling station to work one of the other station operators on a different band

Penalty – QSO points removed during the log checking process in response to errors

QSO Party – a contest focused on a specific location or style of operating, generally of lower intensity than major contests

QSO Points – the point credit for a specific QSO

QTC – a list of logged QSOs exchanged during contests such as the Worked All Europe

Rate – the equivalent number of stations that would be worked in an hour, based on various time periods (last hour, last 10 minutes, last 10 stations, last 100 stations, etc)

Rate sheet – an output from contest logging software showing QSO rate versus time

Reclassify – changing of the category of a submitted log by the contest sponsor to correctly reflect the category of operation

Robot – a software program that processes logs submitted by email

Rover – a mobile station that operates while in motion or from multiple locations in a contest

Run – work stations by calling CQ, a run also means a steady stream of callers in response to CQs

S&P – search-and-pounce, the technique of tuning for stations to work instead of calling CQ

Self spot – spotting one's own frequency and call sign on a spotting network, generally prohibited by contest rules, including requesting to be spotted by another station

Serial Number – the sequential number of the contact in the contest. i.e. first contact, second contact, 199th contact, etc.

Single band – operating a contest exclusively on one band

Skimmer – software that extracts call signs and frequencies from a receiver's audio or IF

SO, SOA, SOAB, SOSB – Single Operator, Single-Operator Assisted, Single-Operator All-Band, Single-Operator Single Band

SO2R – Single-operator, two radio; the practice of using two radios to both call CQ and tune for stations at the same time, usually on different bands

SPC or S/P/C – State, Province, Country, the most common three location-based types of multipliers

Spot – an announcement of a station's call and frequency via a spotting network

Spotting Network – Any method of distributing information about the frequency and call sign of stations on the air, including voice, packet radio, or the Internet

Sprint – a short contest, usually six hours or less

Stack – a set of antennas for one band on a common tower or mast, used to increase forward gain and to control the vertical angle of radiation

Sunday Driver – casual operators that appear late in the contest (usually Sunday afternoon) to make a few QSOs

Sweep – to work all available multipliers

UBN – Unique, Busted, Not In Log, the three ways in which a QSO can be declared invalid

Unique – a call sign that was not in any other submitted log (QSOs with unique call signs are generally accepted at face value by the sponsors, but excessive numbers attract scrutiny)

Unlimited – In Sweepstakes, Unlimited category is the same as SOA in other contests

WARC bands – refers to the amateur bands allocated during the 1979 World Administrative Radio Conference; 30, 17, and 12 meters (also sometimes used to refer to the 60 meter band)

Zone – an area defined by contest sponsors, such as the ITU or CQ Magazine

John Moyle Memorial National Field Day 2009 — Results

Denis Johnstone VK4AE/VK3ZUX

Contest introduction

Welcome to the John Moyle Memorial Field Day. The field day was held over the weekend of the 14 - 15 March, 2009 from 0100 UTC on Saturday till 0059 Sunday.

The WIA and I would like thank all entrants who took part and submitted logs. Perhaps next year more contestants who have gone to the trouble of taking part as a portable station will actually submit their log!

Aim of the contest

The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

This year's winners

In 2009, a total of 123 logs were submitted, 62 portable station and 60 home stations.

The highest scores in each category were as the table.

Editor's Note: A complete list of all results, together with a detailed set of comments from Denis, can be found on the WIA website at:

http://www.wia.org.au/members/contests/johnmoyle Scroll down to page to download to find the link to the 2009 results file.

24 Hour Portable Operation – Multiple Operator

VK3ER	Multi Operator, All Mode, All Band with 589 contacts and a score of 4,573
VK3FRC	Multi Operator, Phone only, VHF with 225 contacts and a score of 3,004
VK3CNE	Multi Operator, Phone Only, All Bands with 387 contacts and a score of 2,364
VK2AWA	Multi Operator, All Mode, HF with 1465 contacts and a score of 3,774
VK2AWX	Multi Operator, Phone only, HF with 581 contacts and a score of 1,162

24 Hour Portable Operation – Single Operator

VK4OE	Single Operator, Phone only, All Band with 174 contacts and a score of 2,057
VK3DAG	Single Operator Phone VHF with 77 contacts and a score of 1,510
VK4HAM	Single Operator Phone HF with 427 contacts and a score of 854
VK1WJ	Single Operator Digital HF with 17 contacts and a score of 30

Six Hour Portable Operation – Multiple Operator

VK3AWS	Multi Operator Phone All Band with 274 contacts and a score of 1,119
VK4WIM	Multi Operator Phone HF with 61 contacts and a score of 118

Six Hour Portable Operation – Single Operator

VK5ZT	Single Operator Phone Only, VHF with 38 contacts and a score of 252
VK4ADC	Single Operator Phone Only, All Band with 152 contacts and a score of 581
VK3HJA	Single Operator Phone Only, HF Bands with 145 contacts and a score of 290

Home Station – 24 Hour

VK4VDX Home Station Operator with 437 contacts and a score of 633

Home Station - 6 Hour

VK2KDP Home Station Operator with 169 contacts and a score of 255

Shortwave Listener - 24 Hour

Bill Cousins ZL2AYZ - Portable from Houghton Bay (Wellington) with 230 points and 115 contacts logged

continued from page 41

CQ WPX CW Results for 2008

Congratulations to the following VK stations:

W6/VK2IMM	150,282	VK6DXI	1,574,482
VK2AEA	928,501	VK7GN	143,620
VK2GR	27,594	VK8AV	44,144
VK3TDX	14,632	VK6DXI	1,574,482
VK4TT	117,068	VK2CCC	9
VK4BUI	239,184	VK3FM	98,890
VK4BAA	192	VK3KE	23,256
VK5SW	810		

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au See you on the bands.

73 de VK4BAA Phil Smeaton.

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News from

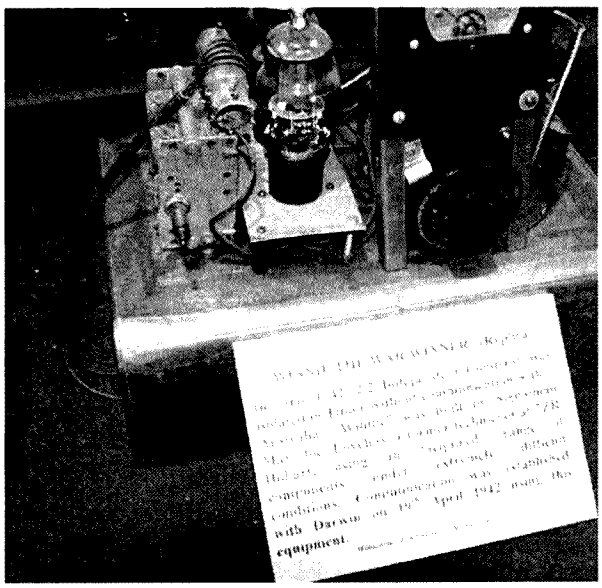
Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

VK7

ANZAC Day reminds us of stories of ordinary people doing extraordinary things.

In World War II Signalman Max (Joe) Loveless VK7ML SK was a signals operator with "Sparrow Force" behind enemy lines on Dutch Timor with the AIF.

Sparrow Force was deficient in supplies, communications equipment had been destroyed and they were out of touch with Australia and it was imperative to re-establish communications. This fell to the men of the 2/2nd Australian Independent Company, including Signallers Max Loveless and Keith Richards, assisted by Jack Sargent and John Donovan.



Replica of Winnie the War Winner at Anglesea Barracks Military Museum, Hobart.



Corey VK7FCJC and his recently constructed LED Callsign panel (photo by VK7DY).

They built from scrap and other equipment what was affectionately named "Winnie the War Winner" after Winston Churchill and they contacted Darwin on the 20th April 1942 to let them know the Australians in Timor were alive and well. The original transmitter is in the National War Memorial in Canberra and a replica is in the Anglesea Military Museum in Hobart thanks to Barry Riseley VK7RS who worked with Max.

Repeater Upgrade

The Barren Tier repeater VK7RIN has been upgraded thanks to Brian VK7RR, Joe VK7JG and Paul VK5BX. The replacement antenna is back on top of the tower, the battery backup system replaced and new feeder installed. Thanks to Paul who is an experienced communications engineer, for his help whilst he was in VK7 on holidays. There is a definite improvement.

North West Tasmanian Amateur Radio Interest Group

The noise on Mount Duncan repeater VK7RMD has been found to be caused by corrosion on the tower. Any slight movement can be heard as severe noise in the receiver. The group is working toward separating the receive and transmit antennas and ensuring that the receive antenna is well away from corroded parts of the tower. Stay tuned for more news in future.

Great Southern Winter Hamfest

The Great Southern Winter Hamfest happens on June 6th and 7th and it is a Sorell Men's Shed Event "Community Project". Saturday will see workshops on antenna construction and field strength testing, satellite dishes and optical communication. Saturday night will see VK7SMS active with awards for contacts. Sunday will be show and tell, homebrew and pre-loved equipment sale. There will be a BBQ lunch and a few raffles with all proceeds going to the Men's Shed. See their website for more details: http://www.sorellmensshed.org/

North West Tasmanian Amateur TeleVision Group

The Club is recording the VK7 Regional News Broadcast for later mp3 download or streaming. See the website for more details at http://www.vk7ax.id.au/spectrum The general meeting on April 4 saw the club rules adopted and a repeater committee formed. The meeting finished up with a talk and discussion from Ron VK7RN on the history of both Amateur Experimental and Broadcasting Stations in the North West during the period 1921 – 1937.

Radio and Electronics Association of Southern Tasmania

The ATV Experimenters' nights have been very well attended with signals going out on both analogue 70 cm and digital 23 cm ATV. The range of topics and presentations is broad and have included - how an Adcock direction finding antenna works, how a fluxgate compass works, the construction of a 80/40 m one transistor QRP transceiver called "The Gnat", using a GDO for ferrite/powdered iron toroid testing and discussions from a 1924 "Boy's Wireless Book", just to name a few topics.

We have many special guests who we interview on air including our regular serviceman interview with Graham VK7ZGK who describes the many pieces of interesting equipment that he gets to fix and service. Another great interview recently was with F-Call holder Corey VK7FCJC who built a LED Callsign panel and Corey described its construction.

ATV Experimenter's nights happen each Wednesday night from 7:30 pm except the first Wednesday night of the month. See you there. http://reast.asn.au/events.php#ATVnights

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Silent Key

Peter Clark VK7PC

Peter John Clark, born 26th of January 1948. After a long difficult battle with cancer, Peter passed away peacefully on the 8th May 2009 in the St. Helens Hospital.

Peter first became licensed in April 1979 and was very active on the bands, particularly 80 and 40 metres, from his home QTH in Launceston and in latter years at Scamander on Tasmania's East Coast, and portable from his weekender at the Great Lake.

Peter was very much the night owl and enjoyed a good old rag chew with his many amateur radio friends.

Peter was a glazier by trade and I can still fondly remember sitting in awe of his skills in the shack of the late VK7NBF Bob Jackson from Falmouth, Bob had broken the glass face on his barometer and Peter deftly cut a piece of glass in seconds to restore the instrument to working order.

He was Vice President of the Central Highlands of Tasmania Amateur Radio Club and a great supporter of our various activities and his cheeky grin and good natured camaraderie will be sadly missed by his many amateur radio friends.

Peter is survived by his wife of 40 years Sue, his two daughters Tania and Amanda and Grandson Kodie.

Vale Peter.

Inserted by Dave O'Brien VK7KDO on behalf of the Central Highlands of Tasmania Amateur Radio Club. **ar**

Shack in a 'shed' at Sorell

There are many shacks in a shed but the Men's Shed at Sorell in Tasmania is the only Men's Shed in Australia to have its own shack and call sign, VK7SMS.

Men's Sheds are gaining credence as a community place for men of all ages to gather and do 'blokey' things such as Woodwork, Metalwork, Restoration of old cars, machinery and museum pieces, Electronics, Amateur Radio, Alternative energy, to name a few.

But it is the companionship and contacts, so often missing in the world of the Australian male, that is important.

The Men's Shed at Sorell, only months old, is running its inaugural hamfest and contact award with D-Day being the 6th of June.



Corey VK7FCJC in the shack at the Sorell Men's Shed

GREAT SOUTHERN WINTER HAMFEST

Inaugural Hamfest at Sorell Men's Shed VK7SMS

June 6 and 7

Hands On and On-air Award contact on Saturday.

Trade, buy and sell, show and tell on Sunday.

Home brew Prizes Skills workshops On-site Camping

VK7SMS will be conducting an on air award from 6pm till 12pm EST on HF,VHF and UHF on Saturday. One contact will qualify for the 'Worked the Sorell Men's Shed' Award.

Full Details from Ken Sulman VK7DY 0409 136 268

E-Mail: ken@sorellmensshed.org

www.sorellmensshed.org

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DX - News & Views

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VK9 territories, Seychelles, island shores and UAE sand

After the harrowing time that the VK9GMW 'boys' had getting to **Mellish Reef,** it was good to get the following report.

We are underway now, April 14th, about 30 nautical miles from Marion Reef. We will stop at the Reef for about six hours: lunch, a quick dive, and then get going again. We cannot leave earlier as we must arrive at the Great Barrier Reef mid-morning so we can see the coral heads and safely navigate around them. We expect to be in port by Thursday evening April 16th. The weather is perfect, almost no wind, and the sea is flat and very comfortable. I guess we have earned it by now.

We timed our departure well and hit the WX window perfectly. It was blowing very hard and raining most of the day we closed the station down, and it continued blowing at 25 knots during most of the night. The wind started dropping and by the morning was down to 15 knots when we got under way at about 0800. It kept gradually dropping to around 5 knots during the following evening and remained calm all night. In any case, we were going with the weather (i.e. it was coming from behind the boat) and things were comfortable from the outset. By the morning the sea was placid, making for a very beautiful sunrise.

Originally we had planned to stop at Marion Reef for a day and a night of rest, but we needed to take advantage of the weather while it lasted, so we are going all the way to Airlie Beach.

They made 20,058 QSOs (2,028 of which were on 160 metres). The Online QSL Request System (OQRS) has been activated for both direct and bureau cards (check http://www.vk9gmw.com for details). The ordinary QSL route is via HA7RY.

VK9LA band and mode statistics for the 22nd March to 3rd April expedition to Lord Howe Island can now be found at http://www.odxg.org/vk9la.htm The most productive band was 40 m (9111 QSOs), followed by 20 m (6714 QSOs) and 30 m (4458 QSOs). The grand total is 30,160 QSOs (18842 CW, 9261 SSB and 2057 RTTY).

Well we certainly have done well with VK9 activity over the past few weeks with VK9M / VK9N / VK9L /VK9X.

So what is happening further afield?

It seems the YW0A DXpedition to Aves **Island** (YV0) continues to be delayed. Their website (www.yw0a.4m5dx.info) reports the Venezuela Navy schedule would keep them on the island for "no less than 30 days". None of the operators or for that matter the entire team has that much free time! The team is hoping for a 7 to 12 day window.

K3IXD, K4QO, W2GJ and W3PP will be active from **Crooked Island** (NA-113), Bahamas from 23rd to 27th July. They will participate in the IOTA Contest as C6APR; before and after the IOTA event C6APR will be on 80-10 metres CW and SSB. The team will sign C6AXD on RTTY and C6AQO on 6 metres (grid FL22). The calls are good for **Bird Rock Lighthouse** (ARLHS BAH-005). All QSLs via K3IXD.

Ramon DU1UGZ will be active as S21UGZ from **Dhaka, Bangladesh** until the 20th June. He operates in his spare time using a low band dipole. For the time being, he will focus on 40 and 80 metres SSB and RTTY, but, hopefully in May he should get a beam for 10, 12, 15, 17 and 20 metres and possibly a linear amplifier as well.
QSL via home call.

Eight members of the "NA-128 Contest Group" (VA2RC, VA2ZO, VE2EDA, VE2EBK, VE2FSK, VE2TKH, VE2MTK and VE2QRA) will be active as CG200I from **Ile Verte** (NA-128) on 23rd to 26th July, including the IOTA Contest.

This special callsign celebrates the 200th anniversary of the lighthouse located on the island, and the group will operate many stations from the lighthouse keeper's quarters. Look for them on 160-6 metres all modes. QSL via VE2CQ, direct or bureau. Further information can be found at www.qrz.com under CG200I.

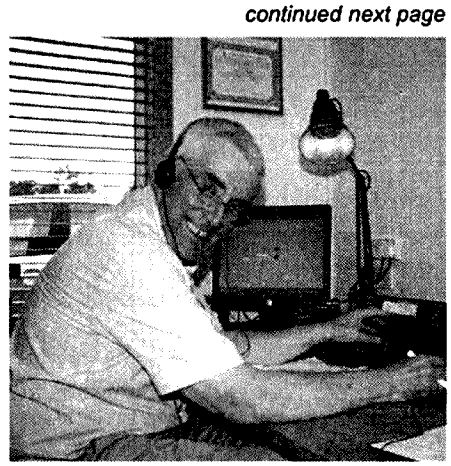
S79DF is Davide IZ3EFL, who is in the Seychelles for about one more year and is planning for a future trip to **Aldabra Island** (AF 025). Davide is a cook at a restaurant and is only QRV in his spare time and currently active only on 20 metres using a dipole. QSL via IV3TDM.

World traveller Wayne W5KDJ is heading next to **Madagascar.** He will be QRV as 5R8KD from July 1st to 15th, plus or minus a day or two. Wayne will be operating on 1.8 through 50 MHz on CW and RTTY. QSL via W5KDJ, including LOTW and eQSL.

John KB4CRT is heading back to **Montserrat** and plans to be QRV as VP2MRT from June 11th to 21st. Activity will be on CW, SSB and maybe even some PSK. He will be looking for Asian stations on 20 meters between 1200 and 1300Z. He will have an FT-897 and PAC-12, 40m inverted V, QSL via KB4CRT.

Czech operators OK1JK, OK1JST, OK1IPS and OK1IEC will be QRV as JW/homecall from **Longyearbyen, Spitsbergen Island** (EU-026), Svalbard, between June 5th and 15th. They will be on all bands on CW, RTTY, PSK and SSB. More details can be found on their Website at: http://jan.kepic.cz/view.php?cisloclanku=2009030003 QSL via the operator's homecall.

continued next page



Nigel G3TXF operating from VK – part of his recent DX tour also covering YJ, FK and VK9/N

Robin L. Harwood VK7RH

PRC busy on European and American hemisphere sites

I am still finding 40 metres very interesting with propagation changing by the hour. In early April, I was hearing short skip late at night. I was somewhat startled to hear VK7s in the south, pinning my needle. Then there was Gerry VK2APG in the Snowy Mountains working in Europe and North America, both on long and short path.

Just a few days later propagation lengthened and there was no sign of any signals in south-eastern Australia. VK6 and ZL were strong and dominating the band around 2100 to 2200 and again around 1100. VK4s also seem to hang in to mid-morning as they usually go by 2100. There is a daily ZL net around 7085 at 2130 and it can be quite good.

Since the majority of broadcasters vacated between 7100 and 7200, amateurs are discovering that there is plenty of DX about and now that it is midwinter, I am expecting that there could be 24 hour propagation.

Yes there are still some broadcasters there and they seem to be the same ones I mentioned last month. The Chinese station on 7125 is in Xizang province in north-western China and relays the Minorities Network, known as CNR8. It seems to run for almost 24 hours, only off between 1600 and 1800. 7105 runs a carrier and modulation is well down yet I have heard Chinese.

I am unsure if it is Mainland China or Taiwan but think the latter, although not a member of the ITU, has shifted into the normal broadcasting segments. However I have noticed a sub-audible heterodyne which indicates that there may be other stations present. This may be in Ethiopia or Eritrea in the Horn of Africa.

China seems to have the largest number of active broadcasting senders on shortwave. Not only do they have many sites in the PRC, but they also use sites in Canada, Cuba, Mali, Luxembourg, Finland, French Guiana, Brazil, and Albania. They also were on a sender in Estonia, yet it is unclear why they ceased there. Instead they leased the former MW senders in Pori, Finland, for broadcasts in German and Polish. The former Radio Luxembourg frequency of 1440 kHz is used for the UK and the Benelux countries. I have found that China Radio International (CRI) is the easiest station to hear on shortwave.

Radio Japan is on 13640 in English at 2100. I heard a talk by a female saying the source of most obesity is because people do not chew for long enough! Well that is all for this month.

Do not forget you can email me at vk7rh@wia.org.au

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DX - News & Views continued

OY/IW4BLZ, operator Maurizio, will be on the **Faroe Islands** July 27th to 29th and Iceland with the callsign TF/IW4BLZ July 31st-August 11th. Maurizio will operate on 80-6 m. QSL to his home call, direct or bureau.

An **Isle of Man** operation planned for July 25th to July 26th is GD0F for the IOTA Contest. GM4AFF, Stewart, will be single operator all band SSB .QSL via M0CMK.

Special callsign VE7IYOA will be on in June and particularly for the ARRL/CRRL Field Day June 27-28 from **Victoria, British Columbia**. The callsign will commemorate the 400 years since Galileo's first use of a telescope to view the stars. The special suffix stands for the International Year of Astronomy. Most activity will likely be in the evenings and at weekends. QSL via VE7DAO. http://www.hamiya2009.info/ve7iyoa.html

LJ2T was the call sign of the Radio (Telegraphers) School (Radioskolen) of the Norwegian Army's Signal Corps from 1945 to 1982. The **Signal Corps Museum of the Norwegian Armed Forces** (Modellkammer Joerstadmoen Sambandsmuseum) has been given permission to use this call sign from 19 to 28 June 2009, in connection with the International Museums Weekends. The Station Manager is LA4LN. The QSL Manager is LA5EAA.

MM3M is a nice call from the **Isle of Arran**, Scotland, (EU-123), for the RSGB IOTA Contest July 25th to 26th. Outside the event, operators G3VCQ, M3VCQ, M0GAV, 2E0JOX and 2E0TJX will use the callsign GS3RCM/p. QSL via the RSGB bureau or direct.

Another (EU-123) operation will be from the **Isle of Bute** again during the IOTA Contest. GM0B will be the callsign for MM0BHX, MM0GPZ, GM0LIR, GM0OQV and GM0NBM. QSL via MM0BHX.

The K5D **(Desecho Island)** website reports that N2OO and his SJDXA team are "getting ready to start pre-processing the QSL requests". All received envelopes have been opened and sorted. Their OQRS is working and they have started pre-processing them. The K5D QSL cards are expected to begin to be sent out in mid-June.

The Daily DX reports that a few A65 callsigns have been issued to foreign residents in the **United Arab Emirates** (A61 is for UAE nationals, A62 for clubs and A60 for special event stations): G4BWP is A65BD (QSL via G5LP), G3XHZ is A65BE (QSL via G3XHZ), G4THN is A65BF, PA5M is A65BG (QSL via PA7FM), F8CUP is A65BH (QSL via F8CUP), F5LTB is A65BK (QSL via SM5DJZ). Still on the subject of A6, NI5DX is now the QSL manager for Kahlid A61BK. Kahlid has already sent his log files, but there will be a delay in replying until the new cards arrive from the printer. This is indeed good news for those chasing QSL cards.

Good luck in the pile-ups until next month.

Special thanks to the authors of *The Daily DX (W3UR) -- 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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AMSAT

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Antenna polarisation and other news

A mixed bag this month. Something old, something new, something altered, something to do. AO-7 chalks up another milestone. India's digital satellite ANUSAT launched. Addendum to April's column and control codes for COMPASS-1.

But first, antenna polarisation.

Satellites and their antennas

The antennas used on the amateur satellites come in various configurations. Here I present a short article on antenna polarisation and list the current popular satellites in use and their antennas.

To get the best signal from transmitter to receiver, both of the antennas should have the same polarisation. Good examples are repeaters which use vertically polarised antennas. While you can access a repeater with a horizontally polarised antenna, you will notice a significant decrease in signal strength. In a worst-case scenario where the antennas are aligned 90° to each other (i.e. one is vertical, the other horizontal), the loss of signal is 20 dB (1/100th the power or 3-4 S points).

For satellites there are two main types of antennas used – linear and circular. Linear antennas are the common whips, dipoles and Yagis used for terrestrial use. The fields generated are fixed in direction.

Circular antennas generate a field that is continually changing. Common types are helices, Lindenblads, and cross polarised Yagis. Circular antennas have 'sense' in that the changing fields rotate in one of two directions.

A simple way to picture this is to look at nuts and bolts. Grab a bolt and put a nut on it. Point the head of the bolt closest to yourself and start taking the nut off. For a common right hand thread combination the nut has to be turned clockwise to remove it from the bolt.

If you use a left hand thread (such as on a gas bottle) the nut has to be turned anti-clockwise to remove it. Also it is impossible to screw a left hand thread nut on a right hand thread bolt (without ruining one or the other).

The same goes for circular antennas. If you look from the reflector of a helix antenna and the electric field rotates clockwise as it moves along the helix then it is Right Hand Circular Polarised (RHCP) signal. This is how the Institute of Electrical and Electronics Engineers define circular polarisation in their standard publication, "IEEE Standard Definitions of Terms for Antennas STD-145".

Similar to the mismatch of threads, using a RHCP antenna at one end and a Left Hand Circular Polarised (LHCP) antenna at the other end also results in a signal loss of 20 dB. If the antennas are the same polarisation but are not pointing directly at each other there will be a mismatch. The polarisation becomes elliptical; a mixture of linear and circular.

Cross Yagi circular polarised antennas can be switched between RHCP and LHCP using relays and phasing lines. Helixes and Lindenblads cannot be changed, you need one of each polarisation for best performance.

But here is the clever bit you cannot do with nuts and bolts. If you have a linear antenna at one end and a circular antenna at the other, the signal loss is only 3dB

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz
VK2RIS Saddleback repeater on 146.975 MHz
VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

In South Australia

VK5TRM Loxton on 147.125 MHz

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-VK HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

(½ the power or only 0.5 S-points). The polarisation of either antenna does not matter in this case.

This is especially useful with satellites as they are continuously changing their antenna orientation throughout a pass.

Users of SO-50 with hand held linear Yagis will know they have to rotate their antenna during a pass to receive the best signal. SO-50 has a linear antenna for its 250 mW 70 cm downlink. If your antenna is pointed 90° to SO-50's, it is the same as hearing it transmitting at 2.5 mW.

If you use a circularly polarised antenna, you will lose half the signal but you will not have to rotate the antenna at all. The same applies to using a linear antenna on the ground to a circular polarised antenna on the satellite.

Below is table of most of the popular satellites currently in use for analogue or digital communication.

AO-7 uses a linear whip for 10 m, and circular polarised antennas for 2 m and 70 cm. The 2 m receiver is RHCP for mode V/H. The 70 cm receiver and 2 m transmitter uses LHCP for mode U/V.

FO-29 uses circularly polarised antennas for 2 m and 70 cm. Due to its motion in space the polarisations change throughout a pass.

GO-32 uses linear whip antennas for the 2 m and 23 cm receivers and circular polarisation for the 70 cm transmitters.

SO-50 uses quarter wave linear whip antennas for 2 m and 70 cm.

AO-51 uses a 2 m linear whip antenna for its 2 m and 10 m receivers. The 70 cm transmitters use circular polarisation. The 23 cm receiver and 13 cm transmitter use linear whip antennas.

VO-52 uses circular polarisation for 2 m and 70 cm.

CO-65 uses linear antennas for the 23 cm receiver and 70 cm transmitter.

The International Space Station uses linear antennas. In the future it will use patch antennas for 23 cm and 13 cm and they are RHCP.

All this shows that different satellites use different antennas and factors you must consider to get maximum benefit from them. Researching this gave me some idea why I cannot hear some of them as well as I might with my linear Yagis.

The inspiration for this article was *"The Case for Polarisation Switching"*, by Jim White W0DE. Jim was a ground controller for AO-40 and has been involved with many of the digital satellites including AO-16 and AO-51. In his 1997 article, he explains the benefits of being able to switch between different antenna polarisations. The satellites he wrote about have all gone silent key so this article brings the idea up to date.

AO-7 lasting longer the second time

Way back in June 1981, the "last" QSO was recorded through AO-7. This was after 6.5 years of service since its launch in 1974. Weak noise was heard from the transponder up to August 1981 until the batteries finally succumbed and AO-7 went silent.

June 2009 marks 7 years since AO-7 came back to life. Despite its sometimes unpredictable behaviour and the need for it to be in sunlight, nearly 50,000 QSOs have been logged on the AO-7 logbook website in the past 6 years. It has a loyal following and is currently our highest operating satellite. May it continue for many more years.

See http://www.planetemily.com/ao7/main.php for more information on AO-7.

New Digital Satellite Launched

On 20/9/2009 ANUSAT was launched from the Indian Space Research Organisation (ISRO) Satish Dhawan space centre. ANUSAT was constructed by the Anna University in Chennai, India and is the first Indian university satellite. Its primary payload is an amateur radio store and forward transponder. No frequency details have been released at the time of writing but from the information published the following is known. ANUSAT is a 600 mm cube with a mass of 40 kg, putting it in the Microsat class. Its orbit has a 400 km perigee and 550 km apogee at an inclination of 41°. The inclination means its lowest latitude is over Bass Strait. It has an estimated lifespan of two years. UO-9 was launched into a similar altitude and lasted around 8 years before re-entry.

The transponder will have an uplink in the 2 m band and a downlink in the 70 cm band. No modulation details have been released. It also has a telemetry beacon on 137.400 MHz and this beacon's carrier signal has been observed by amateurs. Stay tuned for more.

SOHLA-1 Status

In my April column I mentioned that one of the JAXA launched satellites, SOHLA-1, will carry an amateur radio digital transponder. The transponder has been tested over Japan but is unable to be turned on during a whole orbit. However another satellite by the Osaka Prefecture University is planned for launch in 2013. Thank you to Mineo Wakita JE9PEL for this news.

And one for the control freaks out there.

April 2008 saw the successful launch of several Cubesats that are still in operation today. To celebrate one year in orbit the ground controllers of COMPASS-1 have issued 3 command codes that amateurs can send to the satellite to solicit a response. These are the DTMF sequences to be transmitted on 145.980 MHz FM:

**35## - request a test beacon CW

**36## - request a test packet 1k2 AFSK FM (UI-Frame)

**60## - request a housekeeping frame in 1k2 AFSK FM (KISS frame)

Every command will be confirmed with a short "beep" on the CW frequency of 437.275 MHz. Alan ZL2BX has been commanding COMPASS-1 and said that the satellite may not give a response on the packet downlink each time a command is sent. The frequency for packet radio downlink is 437.405 MHz. Mike DK3WN has decoding software for the CW telemetry at http://www.dk3wn.info/software.shtml The CW is 'chirpy' and normally a frame is transmitted every 3 minutes.

If you do try these commands and get some telemetry the ground controllers would be happy if you emailed the received data to compass1cubesat@googlemail.com

Thank you to Kevin DG9KK and Mike DK3WN for this news.

Final comments

During April it was good to read on the AMSAT-VK mailing list that some amateurs were successfully using the 1268.700 MHz uplink to AO-51. Later that month there was good activity with the 2401.200 MHz downlink using mode V/S.

Next month I will be presenting a fully updated 6 monthly satellite review.

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VHF/UHF – An Expanding World

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Weak Signal

David Smith VK3HZ

There is not a great deal to report this month of enhanced propagation conditions. There have been a number of periods of low-level enhancement corresponding to high-pressure cells moving across the south of the country. However, no contacts of note have been made.

At this time of year, because of the quieter conditions, many people seem to shut up shop on VHF/UHF, even to the extent of pulling down the antennas. However, there are still lots of opportunities for long-distance contacts, independent of the weather conditions. You just need to know where to look.

As an aside, newcomers to our hobby tend to be introduced to the VHF/UHF end of the spectrum with a handheld and a few contacts on the local repeater.

Perhaps they might try some simplex contacts. Anything beyond 100 km is considered DX. They do not realise that there is a whole 'nother world out there at the weak signal end of the band.

So, I thought I should give a brief explanation of the possibilities of weak signal communication on the 2 m band, starting from (relatively) close in and working outwards in distance.

Starting with station setup, weak signal work does not necessarily require a super station. Many of the commercial manufacturers have in their range a multiband HF/VHF(/UHF) rig that is good for this usage – the Yaesu FT-847/857/897, Icom IC-706/7000/7400, Kenwood TS-2000 etc.

Then you need a 10-12 element Yagi (horizontally polarised, of course) mounted on a rotator. A run of RG-213 coax connects back to the rig. If the bug takes you, then down the track you can add a power amplifier, masthead preamp, multiple Yagis and a length of Heliax to the list.

With this simple setup, we can work another similarly equipped station up to 300 km away in normal conditions via troposcatter. This assumes that both stations have a reasonable takeoff – no big hills in the way. If the band opens (a tropospheric duct forms), then distances of 2000+ km are quite possible – from Melbourne to Albany, WA or from the east coast across to NZ. If the opening is via Sporadic E, then even longer distances are possible (VK5 to ZL).

However, for much of the time, the band is not open (some of the more paranoid among us believe that the band does not open BECAUSE they are in the shack). So, what to do in these conditions?

If you are interested in working into areas up to 900 km from you, then Aircraft Enhanced Propagation (AEP) is a viable method of doing so. With AEP, signals can rise from inaudible to S9 in the matter of minutes, and disappear just as quickly.

AEP relies on there being an aircraft in line between you and the other station, visible (in the RF sense) to both of you. Then the phenomenon of Bistatic Radar comes into effect and boosts the signal.

Many of us experience AEP fairly randomly on signals. However, there are ways of accurately predicting AEP by finding out aircraft positions, either using your own ADS-B receiver to receive position reports from aircraft in the vicinity, or by using a program like PlanePlotter to get position information from a server.

Then using Google Earth and the Radio Site Display (RSD), we can overlay the path between stations with the aircraft positions and see when AEP will occur.

For a good starter paper on AEP by Mike VK3KH, together with information on RSD and Planeplotter, see www.vk3hz.net

2 m AEP sessions between Melbourne, Canberra, Sydney, Brisbane and beyond are held every morning on 144.2 MHz between 0800 and 0900 EST, corresponding to peak period for aircraft traffic between those cities.

AEP is not just limited to the 2 m band either. AEP contacts have been achieved on 70 cm, 23 cm and 13 cm and I have seen what I believe was very brief AEP on 10 GHz. Enhancement tends to become briefer but more intense with increasing frequency.

If we want to work further than 900 km, then Meteor Scatter (MS) is possible for distances from about 800 km up to 2400 km. Using SSB via MS is possible but you will need to be extremely patient as the longer meteor burns required for such a contact are very few and far between.

Ron VK4DD has been heard in Melbourne via MS on numerous occasions during the morning AEP sessions. Each time, he is inundated with replies, but the meteor has moved on before any contact can be made.

If you really want to exploit MS, then the WSJT FSK441 digital mode is the way to go. You will need a PC and an interface to your rig to use this. Rex VK7MO regularly reports on activity in this area in his Digital DX Modes piece below. More information can be found at: www.vhfdx.radiocorner.net/docs/FSK441-Proc.pdf

Unlike AEP, 2 m is the practical upper limit in frequency for MS. The pings become extremely short on 70 cm. However, it is not impossible and is perhaps an area for further investigation.

If you want to go beyond 2400 km, then EME (Moon bounce) is a possibility. An average-to-large tropo station can make contacts via the moon using the WSJT JT65 digital mode. For more information, see: www.vhfdx.net/jt65bintro.html

So, as you can see, there are plenty of ways to use your station, even if the band conditions are lousy.

Beacons

Mark VK2XOF reports that the last of the VK2RSY beacons at Dural has been successfully replaced with new equipment. The beacon on 432.420 MHz joins the 2 m (144.420 MHz) and 23 cm (1296.420 MHz) beacons. Congratulations to all who put the effort into resurrecting these beacons. Reports would be very welcome.

144.150 Net

The weekly net in Melbourne on 144.150 MHz on Wednesday evening at 2030 EST continues to be popular. Mike VK3KH and Rob VK3MQ are the net controllers. Both have good locations in the Melbourne area and coverage regularly extends from VK3 into VK1, 2, 5 and 7. On a recent net, participating stations included VK5GF, VK5HR, VK5DK, VK7JG, VK3KH, VK3MQ, VK3NJP, VK3ACA, VK3IDL, VK3AXH, VK3KQB, VK3CMC, VK3II, VK3HV and VK3ZYC. If you have nothing else on, call in and join the fun. For more distant stations, use the VK Logger to make the net controllers aware of your presence so they can swing their antennas in your direction.

GippsTech 2009

A reminder that GippsTech 2009 is to be held over the weekend of 11-12 July. This is THE event for the weak signal enthusiast and should not be missed. I suggest arriving on Friday afternoon to join in on the informal Friday night meal at the Morwell Hotel Motel and catch up with other like-minded amateurs.

Then the action commences at 9 am on Saturday with a solid program of presentations on a wide variety of topics. The Saturday night dinner is another opportunity to catch up with people. Then Sunday morning sees the program continuing up to the lunchtime conclusion. More information at: www.vk3bez.org/gippstech.htm

I had the pleasure recently of attending the GippsTech – Special Edition (a.k.a. GT Lite) held in conjunction with the WIA AGM. As well as some repeat presentations from past GippsTech events, the program was expanded to include Software Defined Radio, VLF and even Amplitude Modulation! All presentations were of a very high standard and it was very interesting to see the multitude of directions people are taking in the technical side of our hobby. Well done to all involved in organising and running the event.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

ZL provides the opportunity for many on the east coast of Australia to try out long distance meteor scatter on two metres using the WSJT program and FSK441 mode. A VK-ZL activity session is held each Saturday morning from 0600 to 0700 local time in VK1/2/3/7 on 144.330 MHz with ZL transmitting first period. Active ZL stations are listed below:

Station	Location	Approx Take-off Angle
Bob ZL3TY *	Greymouth	Zero degrees
Starr ZL3CU *	Christchurch	1 degree
Peter ZL4LV *	Dunedin	2 - 4 degrees
Dave ZL4DK *	Dunedin	1 - 2 degrees
Bob ZL1RS #	Bay of Islands	Less than 1 degree
* Regular operators during activity sessions		
# Need to set up a sked but can work from North of Brisbane down to Sydney		

Under normal conditions the maximum range is 2400 km less around 100 km for each degree of take-off angle at each end of the path. Bob ZL3TY is both the closest station and has the best take-off and is regularly worked from Hobart and Canberra, often from Sydney and occasionally as far North as the Queensland border for stations with a good take-off. Starr ZL3CU is regularly worked from Hobart. The ZL4 stations work occasionally into Hobart. Bob ZL1RS has worked John VK4JMC west of Brisbane. To decide if it is worth a try, determine your own take-off angle, subtract 100 km for the total take-off angle of both stations from 2400 km to give you approximate maximum distance and see if the station is within this range. The range of a station can be worked out using the grid locators of both stations as can be obtained on the VK logger and inserting this data in the WSJT program.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

April has been another quiet month on 6 m with very little to report.

From far north Queensland, John VK4TL reports they have been hearing quite a few indicators with the Chinese TV signals being up to S9 on 49.750. On the 20th April John worked 16 x JA stations (TEP) and Trevor VK4ZFC worked 12 x JAs. On the 23rd John worked another 2. Generally though John says TEP on 6 m has been poor.

Locally there have only been a couple of 'E' openings. On the 13th April Wade VK4ACB in Hervey Bay worked Norm VK3DUT, Mike VK3ALZ and Glen VK7AB and a little later a brief opening from VK4 to VK5 when Brian VK5BC/p at Corny Point worked Scott VK4CZ, Brian VK4QB and Doug VK4ADC.

Then on 19th April, a good opening from VK6 to VK5 when the band opened for nearly 2 hours but unfortunately not many stations were listening. Brian VK5BC/p at Corny Point worked John VK6JJ, Peter VK6KXW and Allan VK6ZWZ.

Only other point of interest has been the regular reporting of the VK5RBV Barossa beacon, usually early in the morning by Brad VK2GWB south of Wollongong, Scott VK4CZ Brisbane, Brian VK4QB Rockhampton and Peter VK6KXW Beverley. They all have reported hearing or getting regular bursts from the beacon. Seems this beacon is well located for all areas of VK.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com

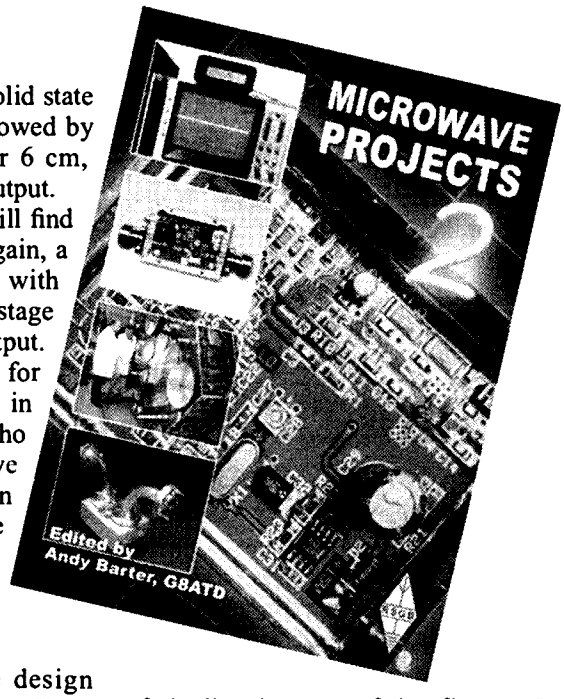
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Book Review

Peter Freeman VK3KAI

Review of *Microwave Projects 2*

Edited by Andy Barter G8ATD



Andy Barter has edited the titles *The International Microwave Handbook* and *Microwave Projects*. In this second *Projects* volume, we see five chapters: Transverters & transmitters, Receive amplifiers, Power Amplifiers, Filters, and Miscellaneous.

All together, there are 27 articles in this compilation. The previous work *Microwave Projects* was published by the RSGB in 2003. RSGB has once again published this second compilation. The editor, Andy Barter, is also the publisher of *VHF Communications* magazine.

It is my understanding that most of the articles published in *VHF Communications* have previously appeared in the German-language magazine *UKW Berichte*. It is therefore not surprising to see that many of the articles in this volume have appeared in *VHF Communications* over the past couple of years. However, even for a reader such as myself who subscribes to VHF Communications and *DUBUS*, there is new, to me, material in *Microwave Projects 2*.

Chapter 1 provides two elegant single board transverter designs: one for 23 cm band with 1 dB Noise Figure (NF) and 500 mW of transmitter output (sufficient to drive higher power amplifiers) and one for 13 cm band with 0.8 dB NF and approximately 1.3 W on transmit. The chapter also includes a description of a PLL controlled ATV transmitter for 10 GHz, including microcontroller module to set the transmit frequency.

The receive amplifier chapter (chapter 2) describes six such amplifiers, covering the 23 cm, 6 cm and 10 GHz amateur bands, as well as one unit with coverage from 800-2000 MHz with sub 1 dB NF and a broadband MMIC which delivers 0.8-1 dB NF across 30 to 2600 MHz range.

The third chapter covers power amplifiers. It includes two designs for 23 cm: a high-power unit (approximately 500 W, when water cooled) using two GI-7BT triodes, and a 50 W solid state design. These designs are followed by two solid state amplifiers for 6 cm, delivering 500 mW and 4 W output.

The 3 cm band enthusiast will find a 1 W design giving 7 dB of gain, a 10 W single stage amplifier, with a gain of 6-7 dB, and a two stage amplifier delivering 10 W output. Next follows a 1 W amplifier for 24 GHz, previously published in DUBUS. For those readers who think that all this "microwave stuff" is esoteric enough, then you will find the final article in this chapter will confirm your thoughts: it discusses techniques for combining power at 76 GHz.

Two articles describe the design techniques required for low pass filters and examples of construction of the filters, one using coaxial construction and the other using microstrip techniques.

The final chapter ("Miscellaneous") covers using YIG oscillators, microwave absorbers, an inexpensive 12 to 24 GHz doubler, the designation of microwave bands and associated dimensions (including waveguide dimensions), a low power RF wattmeter for use in the 1-1000 MHz range, and a universal PLL oscillator module usable in the frequency range 2-7 GHz.

Similar to his previous microwave text compilations, *Microwave Projects 2* is a useful collection of articles which describe recent projects from amateurs across Europe, with one contribution from the US.

It is interesting to note that only one UK amateur appears in this RSGB publication. The text is easy to read, although there are a few typographical errors – nothing serious though. There are two aspects that I do find disappointing. As occurred in *Microwave Projects*, many of the circuit diagrams are virtually unreadable: the line and text definition is poor, with some having grey areas of shading in parts of the figure. In addition, many photos have reproduced poorly.

They are dark and lack tonal range and contrast. In many cases, one can only decipher vague outlines of the devices photographed and little if any detail. These faults may be, in part, due to the variety of sources used for the book material.

They certainly show that, apparently, little care was taken in preparation of the graphical material prior to publication and inadequate quality control at the printing stage. The impression that I have is that much of the graphic and photographic material may be second or third generation.

However, a saving grace is that several articles are now also available on various websites, especially the projects by French authors.

This 216 page book was published in 2005 and would be a useful addition to the library of any amateur interested in microwave communications. It is available from the WIA Bookshop for $52.00 plus postage (WIA member price).

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A VK3ZRX short story RFI

John Morrissey VK3ZRX

A domestic "search and destroy" mission finds the RFI source in the universal trouble spot - the son's room!

I recently had a spectacular case of mains-borne RFI. The problem showed up when I was trying to make phase noise measurements on equipment, and consisted of bursts of RF at the peak of each half-cycle of the 240 V AC waveform.

Yes, the interference was so bad I could easily see it on the scope, via stray pickup! It showed up as a series of damped oscillations with an estimated frequency near 2 MHz.

I then searched for it with a receiver, and sure enough found it centred at 1.98 MHz. It also had various strong sidebands over several hundred kilohertz. It sounded very similar to "motor commutator" noise bursts, but the frequency distribution was not broadband. The next problem was to track down the source, which I guessed would probably be a switchmode supply. As we run off our own pole sub (local transformer from 22 kV), it was more than likely the interference came from our house.

In the past, I have found that using a 'sniffer loop' with a handheld receiver can be very effective. The advantage of the loop is that it reacts mainly to the magnetic field of the interference currents, and it is much easier to localise the source of the interference than using a whip antenna.

I just made up a stack of adapters (banana post to BNC, then BNC to SMA for the VX-5R) and connected a clip lead as a simple loop antenna. I then went hunting - holding the loop near any conductors, cables, and so on to get an idea of the amount of interference current flowing. (This technique is also very useful, with a suitably small loop, for tracking down and silencing the causes of noise in other equipment).

The main problem was that the interference was so strong, it showed up in virtually every conductor in and near the house - even the cables from the tower! Eventually I found that the interference was very strong near a computer network server which has network cables to several rooms of the house, one of which had more noise than the rest. I soon traced this back to my son's bedroom where he was using his computer.

When asked, he shut down his computer, and the noise reduced dramatically but did not go completely. To prove the point, I turned off power to the house and the remainder disappeared. We then powered up his computer again and checked all of the peripherals. It did not take long to find that he had a couple of backup disk drives connected to the main computer via the USB port, and the noise was coming from the small power supply for these.

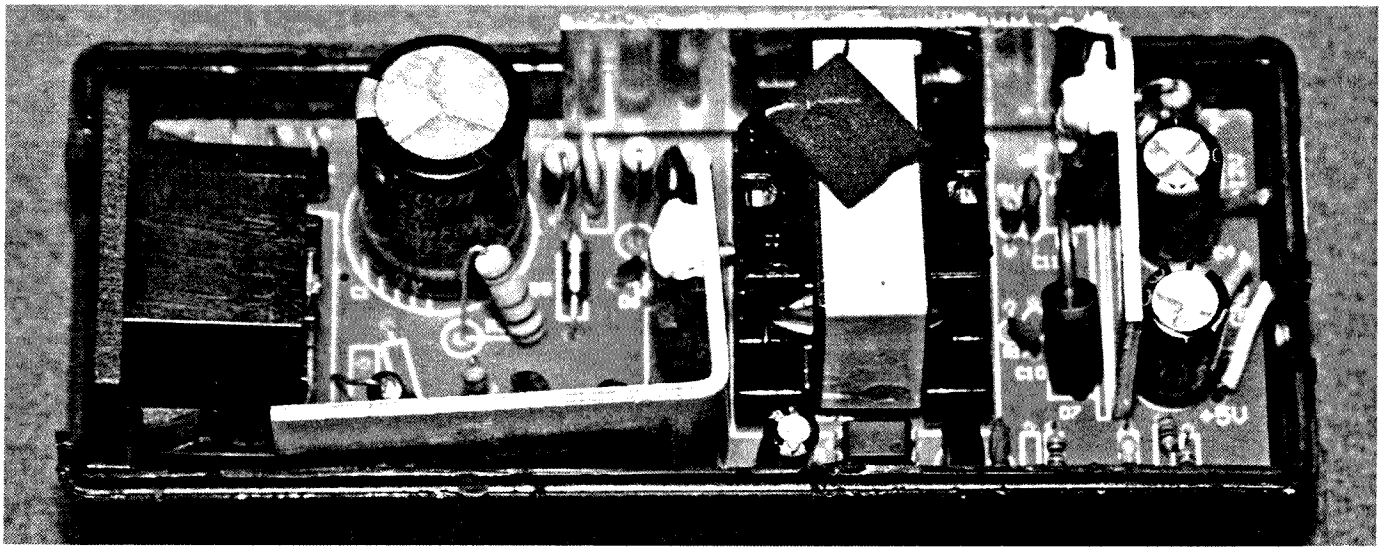
On further investigation, I found that with no load on the supply, there was not much noise, but while the disk drive was starting up or active, the noise got much worse. In addition, the noise seemed to be being differentially injected into the mains power input and the DC output – both had very high levels of noise current.

Breaking open the plastic case of the power supply revealed a small switchmode supply - with no interference suppression of any sort. There were not even any chokes in the DC output - just two diodes and a capacitor (forming a full wave biphase rectifier) in the +5 V supply, and a single diode and capacitor (half wave rectifier) in the +12 V supply. There was absolutely no suppression on the primary side, either. About as crude as it gets! The power supply, although purchased in Australia, was made in China (where else?) and did not have any C-tick or other compliance markings.

I tried installing an X-rated capacitor across the mains input and ferrite chokes in the input and output leads, but these made very little difference. The cure in the end? Chop the output cable from the device (to salvage the connector plug) and wire up an adapter to plug into the internal computer disk drive power connections, to pick up +5 V and +12 V from the computer itself. Result - golden silence!

The nasty thought is - I wonder how many of these el-cheapo power supplies are distributed across Australia, all contributing to the electromagnetic fog on the lower bands?

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Internal view of the nasty, noisy power supply (no discernable brand name, but does have the model number GXP34-12.0/5.0-2000). Note the total lack of any RFI suppression!

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VK5JST Antenna Analyser assembled and tested (see AR article May 2006) $120.00. Can email a photo if required. Thanks Roderick Wall VK3YC, 0413 074 386 vk3yc@wia.org.au.



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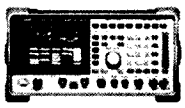
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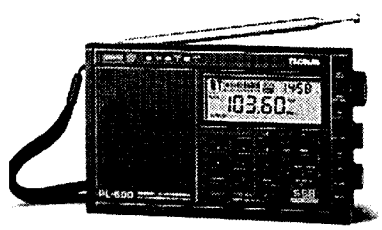
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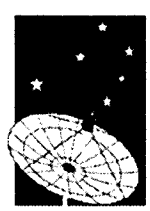


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VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 4339.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters. Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters. Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.
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Note that many clubs broadcast the WIA News via local VHF and UHF repeaters.

Check the News section of the WIA website.



Tony Hutchison receives Chris Jones Award

Michael Owen VK3KI

Tony Hutchison VK5ZAI is the WIA ARISS Coordinator and ARISS Coordinator for the Asia Pacific Region.

Tony says that ARISS, Amateur Radio on International Space Station is a positive way of introducing our hobby of amateur radio to students, and others throughout the world by demonstrating how it is used to communicate with the crews on the International Space Station.

During the year eight schools in the region took part in scheduled link ups with the ISS crews, including three from New Zealand and the rest from Australia.

The value of Tony's contribution to amateur radio and the WIA was recognised by the presentation of the Chris Jones Award at the Open Forum.

The award is a handsome glass plaque and presenting the award to Tony, WIA President Michael Owen VK3KI read the inscription which is:

"The Chris Jones Award honours the memory of a man who was dedicated to the advancement of amateur radio and whose unfailing commitment and vision led to a new Wireless Institute of Australia and whose unfailing courtesy and genuine friendliness is fondly remembered by all who knew him."

Tony accepted the award, thanking all those who had supported ARISS.

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WIRELESS INSTITUTE OF AUSTRALIA



TINA VK5TMC

ALARA's new president brings a global focus

THE LIGHTHOUSE CHALLENGE

ISSN 0002-6859

A WONDERFUL OLD TIMER

Grand lady operator, Mavis Stafford VK3KS has been a radio amateur for 70 years and a luncheon on the first weekend of June in Melbourne was held in her honour.

The occasion was organised by the Australian Ladies Amateur Radio Association, which she has actively supported since its formation in 1975.
Full story inside.



Mavis Stafford VK3KS celebrates 70 years as a licensed amateur.

Below: A view of the cake, the President's Commendation certificate and a commemorative trophy presented to Mavis by ALARA.



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Our Cover this month

Our cover this month features Tina VK5TMC, the incoming ALARA President. ALARA is hosting the YL International in 2012 so Tina's Presidency will be a busy one. Full story on page 22.

Photo by Christine VK5CTY, Earth courtesy of NASA/Reto Stöckli, design by G Nieman.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3KAI

Winter

Winter has arrived in VK3 – some very cold nights in Churchill in the past few weeks. Snow has fallen on the peaks and the resorts are offering enticements for the skiers to make the trek and spend some dollars. Many farmers are happy that they have received some rain, but most note that they need more to make up for low rainfall levels over past months and years.

We have also been hearing the news of heavy falls further north – too heavy in places! Such is the nature of weather – at times it can be frustrating.

The Winter VHF/UHF Field Day will have been held by the time this issue is printed – I hope all that participated were happy with their efforts. Please do remember to submit your log, even if you do not think that you can win. It is helpful for the Contest Manager to receive as many logs as possible.

And you are also likely to receive at least a certificate acknowledging your participation.

Local activity

At the local club (Eastern Zone Amateur Radio Club Inc.), the committee members have only just a little breathing time after the WIA AGM weekend of activities. After just a few weeks of respite, several of us moved to planning and then running a training and assessment weekend, which will see five candidates on air with their new callsigns in the near future.

With that event completed, it is now all hands on deck to ensure that GippsTech 2009 happens as planned on the weekend of July 10, 11 and 12. We are close to finalising the program and the registration information can be found on the club website. Registrations have been coming in slowly, but we are hoping for another successful event.

Calendar of events

I would like to remind all clubs that the WIA website has an on-line Calendar – available under the "News and Events" tab. It is very easy to submit details of your planned event – just click the "Submit a calendar event" link from the calendar page, fill in the form and then submit.

Within a day or so, your event will be listed. This will help other clubs with their planning, so please enter your event as soon as you have decided on a date. This is especially important for events such as hamfests, where clubs are keen to attract attendees from further afield than just the normal club catchment area.

Women in radio

July marks the anniversary for ALARA, so we traditionally have some articles in the July issue with a "Women in radio" focus. Whenever possible, we also include an appropriate photograph on the cover. This year we have Tina VK5TMC, the new President of ALARA and also the co-ordinator of the International YL Meet to be held in Adelaide in 2012.

August – another busy month

I trust that your planning for activities during August is going well.

The Calendar shows two hamfest events on August 2nd – one in WA and the Yarra Valley event, postponed from February due to the Victorian bushfires.

In the latter half of the month we have the Remembrance Day Contest and the ALARA contest. On the same weekend as the RD Contest, many groups will be participating in the International Lighthouse Lightship Weekend – not itself a contest, but that does not mean that you cannot also participate in the RD!

Errata

In the report on the WIA AGM weekend of activities, I made an error in the section concerning the annual WIA dinner. The mystery guest was actually "Dr Ron" VK3EHF from TechTalk Radio. The web address for the TechTalk Radio group is www.techtalkradio.com.au There are certainly some interesting topics covered during their shows.

I also failed to acknowledge that all the photos included in the report were taken by Robert Broomhead VK3DN. I know that he is not worried about this small omission, but I believe that his contribution should be recognised.

Cheers,
Peter VK3KAI

ar

Phil Wait VK2DKN

Amateur Radio and Emergency and Community Services

It started at a Board meeting on 2nd March 2008, when the Directors were joined for lunch by Fred Swainston VK3DAC, the head of WIA's Registered training Organisation (RTO), Trainsafe Australia.

Fred agreed to "investigate and advise the best way to create a nationally recognised accreditation to qualify amateurs with an appropriate simple competency to provide emergency communications if the need arises."

Subsequently the Board received and considered a written report from Fred, finally resolving to seek the creation of appropriate competencies. The Board had reached the conclusion that nationally recognised competencies are now necessary to underpin the community service aspects of amateur radio.

At the Open Forum following the Annual General Meeting in May 2009, the Directors announced their intention to develop nationally recognised competencies for radio amateurs engaging in emergency or community service communications.

As National Competency Standards are increasingly required in all workplaces, the emergency services are also looking to competency standards in order to address issues such as "duty of care" and "management of risk".

Without acquiring the competencies expected by the community and the emergency services, radio amateurs will not be seen as an acceptable risk in emergency situations, and so the utilisation of their skills and knowledge may be severely limited.

We must also recognise that today there is an expectation that all activities, including amateur radio, should contribute back to the community in some way. This expectation is reflected in the spectrum management principles that have been adopted by ACMA, where the highest value use of the spectrum, including value to the community, is relevant.

By strengthening our community involvement, our "social worth", through a set of national competencies in emergency preparedness, we not only provide valuable community assistance, we also help ourselves.

The WIA's RTO, Trainsafe Australia, has completed a review of existing nationally recognised competencies and has submitted a proposal to the WIA Board based on competencies in the existing Public Safety training package. Modifying an existing recognised competency is a much easier and more cost effective road than developing a total package from scratch.

Without acquiring the competencies expected by the community and the emergency services, radio amateurs will not be seen as an acceptable risk in emergency situations, and so the utilisation of their skills and knowledge may be severely limited.

Two competency levels are proposed.

The first level accommodates situations where only manpower is provided to an existing emergency communications facility, out of harm's way, such as occurred in the recent Victorian bushfires.

Training and accreditation to the first level is to be offered to all amateur licence levels, as well as trained but un-licensed persons and operators from other services.

The second level accommodates situations where communications technology is also provided, often in technically dynamic and challenging situations.

Training and accreditation to the second level is to be offered to Standard and Advanced amateur radio licensees, or those holding a higher level communications qualification. We anticipate that for insurance purposes, all persons applying for either qualification will need to be WIA members.

It is our intention to lever off the WIA's existing training, assessment and accreditation structure, now existing through the WIA's affiliated clubs, for qualifying amateur radio operators to these new competencies.

Having made that decision, the WIA Board is very aware that some clubs will not have the resources, or the inclination, to provide such training and assessment. On the other hand, we do expect that many clubs with an existing emergency services component will be very keen to become involved.

Training and assessment resources will be provided.

The timelines provided to the WIA board for the introduction of this new structure suggest that a suitable training and accreditation system may not be operational until mid next year, that is, mid 2010, at the earliest.

However, because of the importance of meeting this challenge, we intend to adopt interim arrangements that will allow the service to start much earlier,hopefully by December 2009.

These interim arrangements will allow persons who can demonstrate competency to be accredited for a maximum of two (2) years prior to completing the formal training and assessment requirements.

We are entering a new and exciting chapter in the provision of Amateur Radio emergency and community services in Australia.

Phil Wait is the WIA Director responsible for and Coordinator of the WIA's role in relation to emergency communications. This Comment was written by Phil with assistance from Fred Swainston.

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2009 Club Grant Scheme

Innovative ideas are sought for

Projects to attract new amateurs and
Projects supporting emergency communications

Applications close 31 July 2009

The rules and application form can be downloaded from

http://www.wia.org.au/members/affiliation/about/

WIA News

Band 135.7 – 137.8 kHz now available to Advanced licensees who apply

ACMA has advised the WIA that any Advanced licencee may now apply to ACMA for a variation of their licence to allow operation on a secondary basis in the band 135.7 – 137.8 kHz.

Amateur operation in that band is subject to a maximum radiated power of 1 Watt (e.i.r.p.).

Application for a variation of licence to allow use on the new LF band should be made on ACMA form R057 (downloadable from the ACMA website) to the Licensing, Allocations and Information Section, National Licensing and Allocation Branch, PO Box 78, Belconnen, ACT 2616 accompanied by the ACMA fee of $41.

ACMA amended the Australian Radiofrequency Spectrum Plan in January to allow amateur operation on this LF band, allocated to the amateur service at the ITU's WRC in 2007, but has not yet amended the Amateur LCD or the Visiting Amateurs Class Licence to allow operation due, it says, to a lack of resources, and does not see itself being able to further progress the matter before the end of the current year.

The WIA suggested that, as each Advanced amateur licence became due for renewal, the necessary additional condition could be included in the renewed licence, but again ACMA has advised that this would involve additional resources better applied in other directions.

However, ACMA will include the necessary conditions as a variation to each Advanced licensee who applies for a variation of his or her licence to allow operation on this band.

WIA hosts Sydney repeater builders' forum

On Sunday 7th June 2009, the WIA, represented by WIA Director Peter Young VK3MV and Peter Mill VK3ZPP, WIA Repeater and Beacon Coordinator, hosted a forum of amateur repeater builders and maintainers in Sydney.

The forum was organised by the WIA to formulate options for addressing identified interference issues between repeaters along the NSW coastal areas and the need to explore future spectrum options for new digital technologies.

Not surprisingly, as in the commercial radiocommunications industry, amateur spectrum in the 2 metre VHF band and, to a lesser degree, in the 70 cm UHF band is congested or not available for new technologies.

The forum commenced with a presentation from the two Peters on the issues and how other IARU Regions have tackled similar problems, which stimulated further discussion of the issues. The outcome lead to some positive steps forward for the need to explore better use of CTCSS tone code to protect FM repeaters from unwanted incidental interference, a tentative way forward to address adjacent FM channel interference issues from D-Star mobiles and the development of 12.5 kHz plans for repeaters and simplex channels for wider discussion in the amateur community.

ACMA to close South Australian and Perth Field Offices

At the Senate Estimates hearing on 25 May, the ACMA advised the Senate Committee that it proposes to close the Adelaide and Perth ACMA field offices which are responsible for conducting radio interference investigations in their respective regions. The Australian newspaper reported on the closures.

IARU Region 3 Secretary Resigns

The Directors of IARU R3 have most reluctantly accepted the resignation of Keigo Komuro JA1KB who has retired from the office of secretary after 15 years. The change, effective from 1 June, sees the Assistant Secretary, Jay S. Oka JA1TRC/KH2J become the Secretary of the regional body that has member radio societies in Asia and Oceania.

In an information circular to IARU R3 member societies, Keigo JA1KB said, "I had expressed my wish to resign to the Directors some time ago. I would like to thank all of you for your contribution to IARU Region 3 and your warm support extended to me over that period."

IARU Region 3 Chairman, Michael Owen VK3KI said Keigo came to Region 3 with a professional background in satellite communications and International Telecommunications Union experience.

"After 16 years as a Director followed by 15 years as Secretary, Keigo has built up an incredible knowledge of the IARU, particularly Region 3 and has made a very important contribution to amateur radio," said Michael "The Directors were most reluctant to lose the experience and skills of Keigo and were delighted that he was prepared to accept the position of Special Advisor to the Directors."

Effective from 1 June 2009, Assistant Secretary, Jay S. Oka JA1TRC/KH2J becomes Secretary IARU R3

IARU HF World Championship Contest

The 2009 IARU HF World Championship Contest takes place the second full weekend of July, beginning 1200 UTC Saturday and ending 1200 UTC Sunday (11-12 July 2009). Both Single and Multi operator stations may operate the entire 24-hour period. All licensed amateurs worldwide are eligible to participate in this contest.

The objective of this contest is to contact as many other amateurs, especially IARU member society HQ stations, around the world as possible using the 160, 80, 40, 20, 15 and 10 metre bands.

VK7WI will be on air as an HQ station operating in Zone 59. Jay S. Oka JA1TRC, Secretary, IARU Region 3 is planning to participate in this contest and hopes to contact as many as possible during the contest.

NZART Conference

WIA President Michael Owen VK3KI and WIA Director Peter Young VK3MV were guests of NZART at the Annual Conference held at Hastings, New Zealand on the NZ Queens Birthday weekend of 30 and 31 May 2009.

NZART and WIA take it in turns to host representatives of the other society, and each invites their guest to participate in their Board or Council meetings, and their Annual General meeting.

Both Michael and Peter reported on current Australian developments, and learnt much from the WIA's sister society.

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PC RFI reduction and sound-card interface

Dale Hughes VK1DSH

Computers have changed and enhanced many aspects of amateur radio, making available tools and modes of communication previously unimagined. The processing power available to generate or analyse audio signals via a sound card can replace a large amount of traditional components.

Suitable interfaces to connect the computer to the radio exist and can be purchased or built (see Reference 1, for example), which make use of the 'sound card' modes very easy.

However, laptop and workstation Personal Computers are full of high speed logic and switching power supply circuitry that can generate significant radio frequency interference (RFI) which often makes their use with sensitive receivers difficult. The emphasis of this article is on noise reduction, describing techniques that have been applied to a typical equipment setup. No originality is claimed for any part of the circuitry.

Application of the following techniques have allowed many hours of happy use of the various 'sound card modes' that are now available. The equipment used was a second hand Dell laptop and an elderly Yaesu FT-707 transceiver.

Noise sources and types

Interference is emitted by the PC in two ways: direct radiation and conduction.

This means that two distinct, but related, approaches may be required to eliminate or reduce problems caused by RFI. Direct radiation of RFI occurs when the PC radiates radio frequency noise that is picked up by the receiving antenna or directly by the radio because of inadequate screening. Conduction of noise can occur through signal cables (analogue or digital) that connect the PC to the radio, or through mutual power supply connections.

Signals that are conducted by cables may also be re-radiated, so solving the conduction problem may also help reduce radiated noise. In my case it was easy to determine if the noise was conducted or radiated; this was done by listening to the receiver output and

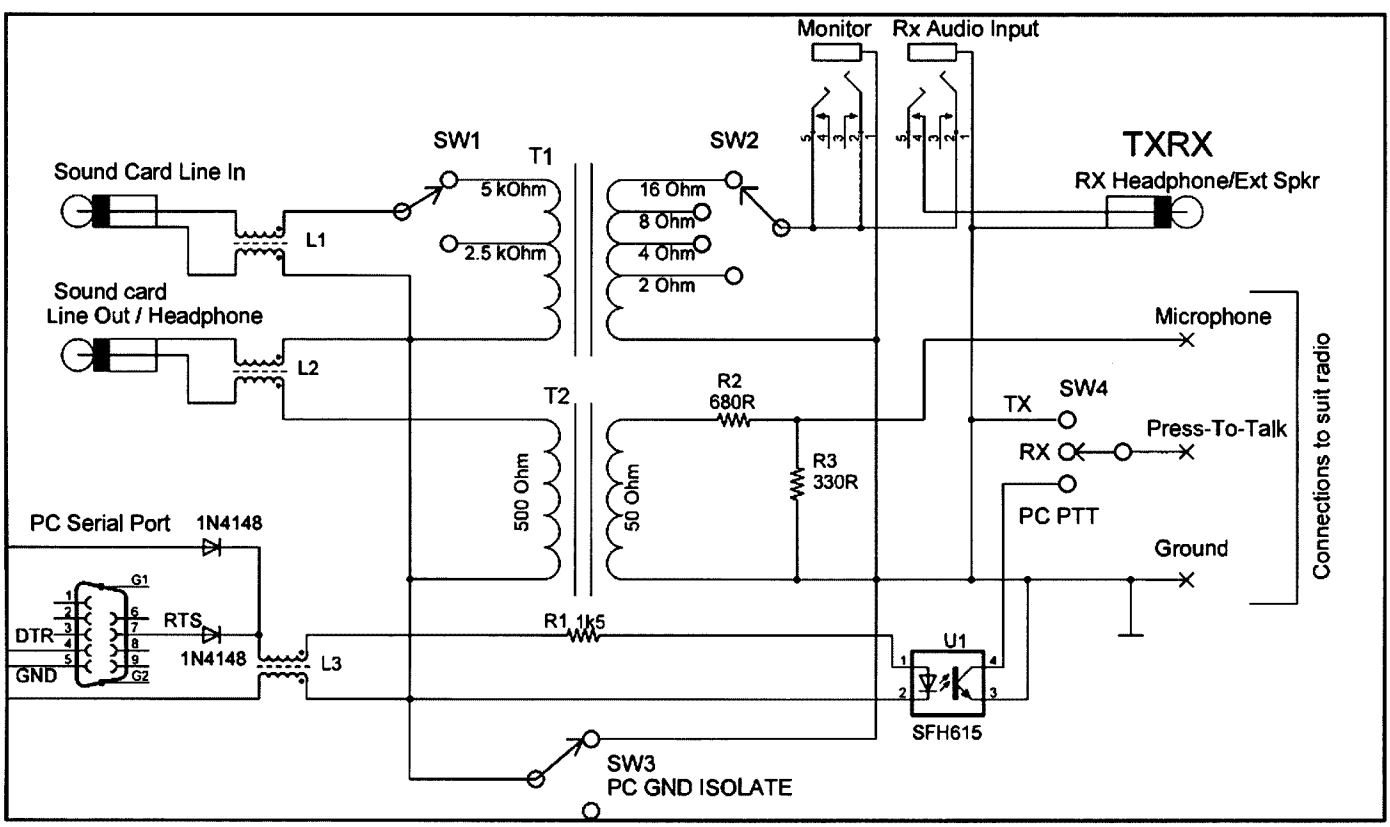


Figure 1: Schematic diagram of interface. Note that the two 1N4148 diodes are mounted in the connector back-shell and that L1, L2 and L3 are common mode chokes made from wrapping the cable through ferrite tubes. The chokes should be as close to the PC as possible.

disconnecting the antenna input. If the noise went away when the antenna was disconnected it was radiated noise, if it did not, it was conducted noise.

The emitted noise appears to be of two types: wide band hash and narrow band 'birdies'; both types are significantly reduced or eliminated if the following steps are taken. Depending on the transmission mode and equipment you are using, one type of noise may be more troublesome than the other.

Reduction of conducted noise: Audio signals

Typical connections between a PC and radio are audio signals from a sound card to the radio's microphone input and speaker (or headphone) output. Data and/or control signals from the computers serial or parallel port may also be used for modulation or Press-To-Talk control.

In both cases a number of techniques can be used to eliminate conducted noise. The solution includes use of galvanic isolation, screening and use of RF chokes. Figure 1 shows the schematic diagram of the interface I use which has successfully reduced RFI in my setup.

The audio signal lines between the PC and radio are isolated using audio transformers. This means that there is no direct ('metallic' or 'galvanic') coupling between the two units.

The signals are only coupled through magnetic transformer action and this eliminates any common mode signals or coupling of noise through the common earth connection.

Note that the signal earth is isolated, but that a switch (SW3) has been included to connect the common of the radio and PC together if necessary. Chokes are also fitted on the signal lines as they leave the PC; the chokes are 29 mm long ferrite tubes that the audio coaxial cables are wound through. It was possible to wind three or four turns of miniature coaxial cable through the tubes.

Clip-on tubes are also available if it's not possible to fit the connector and cable through the tube. The ferrite tube adds significant inductance on the outside of the cable that reduces any noise that is conducted on the outside of the coax screen.

The ferrite tubes were purchased from Jaycar and the catalogue number is LF1260. As many as necessary can be added to reduce conducted noise.

Although adequate control of audio signal level through the receive and transmit paths can usually be achieved through the 'audio control panel' of the PC; switches SW1, SW2 and resistors R2 and R3 provide (optional) additional control if required.

Jacks and terminals have been included so that the received and transmitted audio signals may be monitored using headphones if required.

Reduction of conducted noise: Press-To-Talk Control

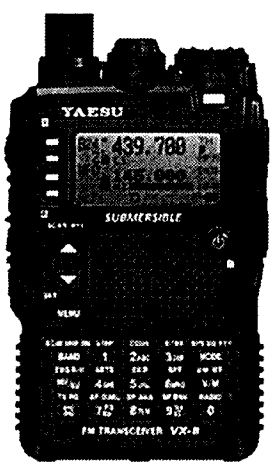
The PTT control line is isolated by using an opto-coupler. The DTR and RTS lines switch to a positive voltage when the PC needs to switch from receive to transmit; the output transistor is then switched on which pulls the PTT input of the transmitter to ground, enabling the transmitter. Again, no direct ground connection is made between the equipment. Manual control of the PTT

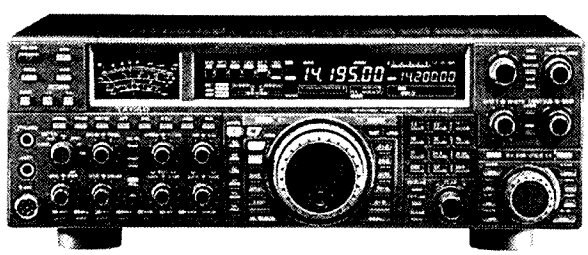
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line is possible via SW4 which can switch between receive and transmit, as well as enabling automatic control from the PC.

Reduction of conducted noise: Power supply

Computer power supplies can be a significant source of noise. In my case the laptop 240 V AC supply was very noisy, so I chose to replace it with a DC-DC converter.

Additional RFI filtering comprising common mode chokes (same as used above) and filter was added. The DC-DC converter was powered by the station battery supply (24 V DC); this also makes it possible to run the PC for an extended period of time when in the field.

The PC required about 13 volts to run correctly, so a Powerbox supply type PBIH-2412J was used (See Reference 2). This converter has an input voltage range of 19 to 32 volts, with a nominal output voltage of 12 volts at 4.3 amps (50 W); but is adjustable over at least +/- 10%.

The supply was mounted in a diecast box with the additional chokes and filter capacitors fitted to the power supply input and output; polarity protection by means of a Schottky diode (D1) was also included. Diode D2 provides limited protection in the event that the output is connected to another power supply.

Figure 2 shows the schematic diagram of the power supply unit. Note that various versions of the power supply exist with different input and output voltages, so other units may be selected

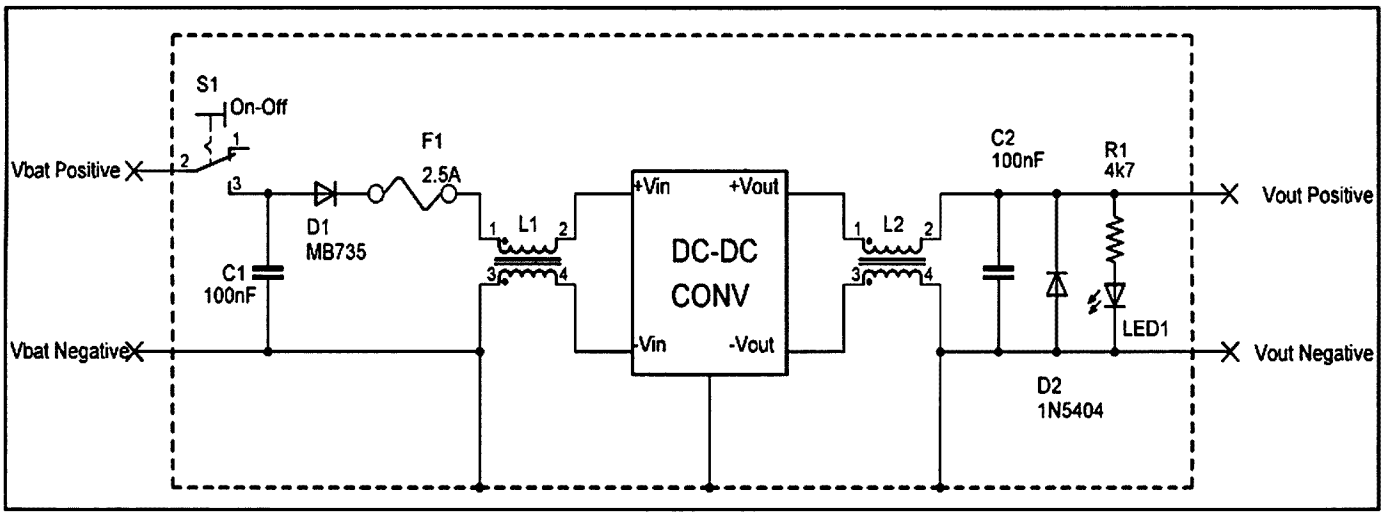


Figure 2: Schematic diagram of power supply.

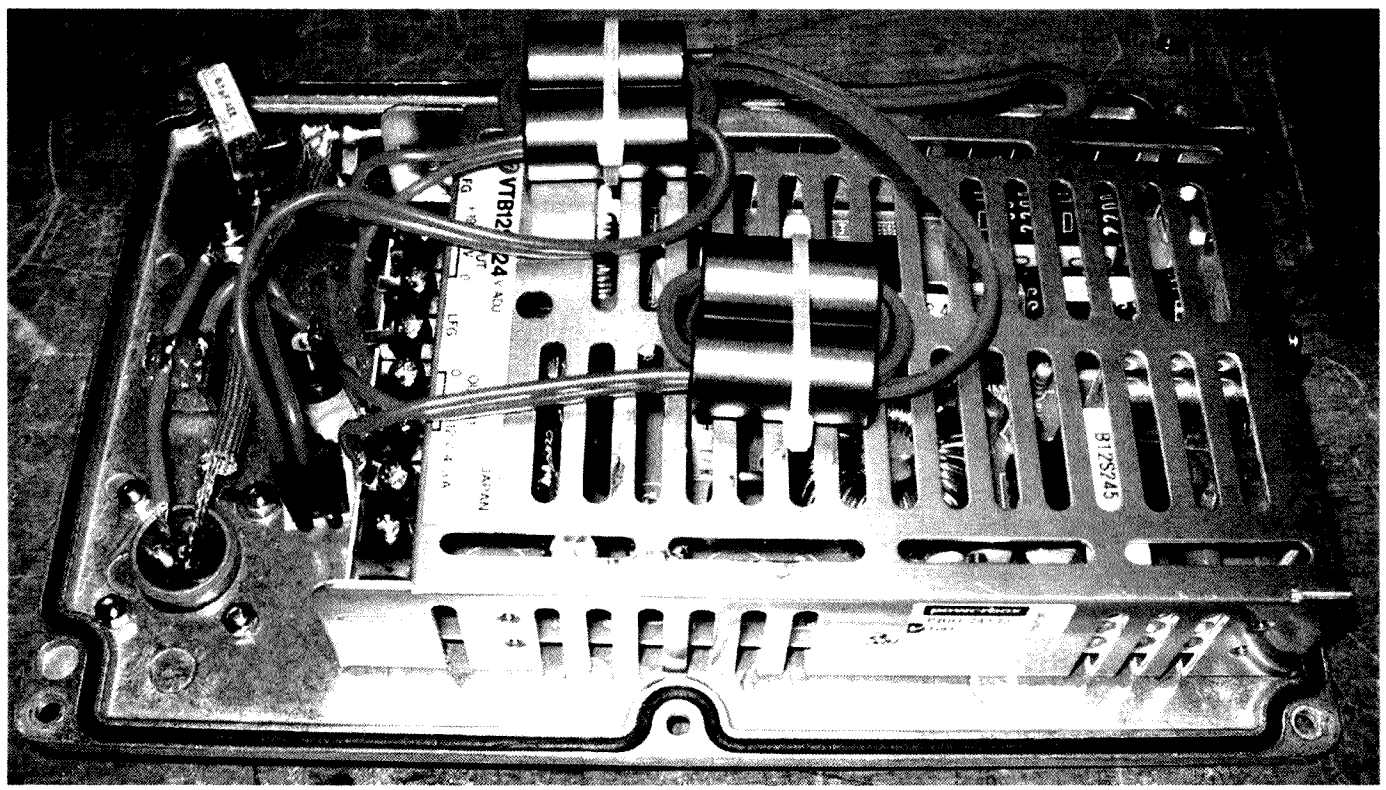


Figure 3: Internal view of power supply showing chokes and DC-DC convertor module.

to suit different battery supplies or computers.

Desktop computers will require a different solution. I have found that using good quality line filters and a 1:1 240 V AC isolation transformer can reduce noise emissions from such computers. In this case - for safety – it is imperative that the PC case is earthed. An additional low impedance connection to an earth stake can reduce noise emission from the PC's circuitry.

Reduction of radiated noise

Noise was found to be radiated from all of the signal lines and the installation of chokes on each of the cables eliminated the problem.

The other significant source of noise was found to be the display, either from the display electronics or from the backlight inverter.

Noise emission was significantly reduced by fitting conductive screens to the back of the display (that is, the top of the laptop) as well as underneath the PC base. I used thin un-etched printed circuit laminate attached using small squares of Velcro tape. Earth straps were soldered to the PCB screens which were then connected to the PC common via a convenient connector.

This significantly reduced RFI radiated by the screen. A final factor to consider is proximity; simply moving the PC further away from the radio may reduce interference.

Components and construction

None of the components used in the interface are critical and components sourced from the junk box, or purchased new can be used.

Transformer T1 is a speaker transformer used in public address installations, the ability to change taps is useful but not essential; T2 is a small audio transformer with 500 to 50 Ohm windings.

For either T1 or T2, transformers with other turns ratios can be used if they are available; in which case the audio levels to and from the sound card may need adjustment using the PC control panel or by changing the values of R2 and R3.

For example, Jaycar catalogue items MM-2530 or MM-2532 audio output transformers appear suitable and are relatively inexpensive. Other published designs have used 600:600 ohm telephone isolation transformers in similar applications.

Again, possible examples appear in the current Jaycar catalogue. Remember, it is the isolation feature of the transformer's function we are seeking to exploit here rather than any changes to voltage levels, so be prepared to experiment with what you can find.

The opto-coupler is a low current device, but the more common 4N26 device should also work if the value of

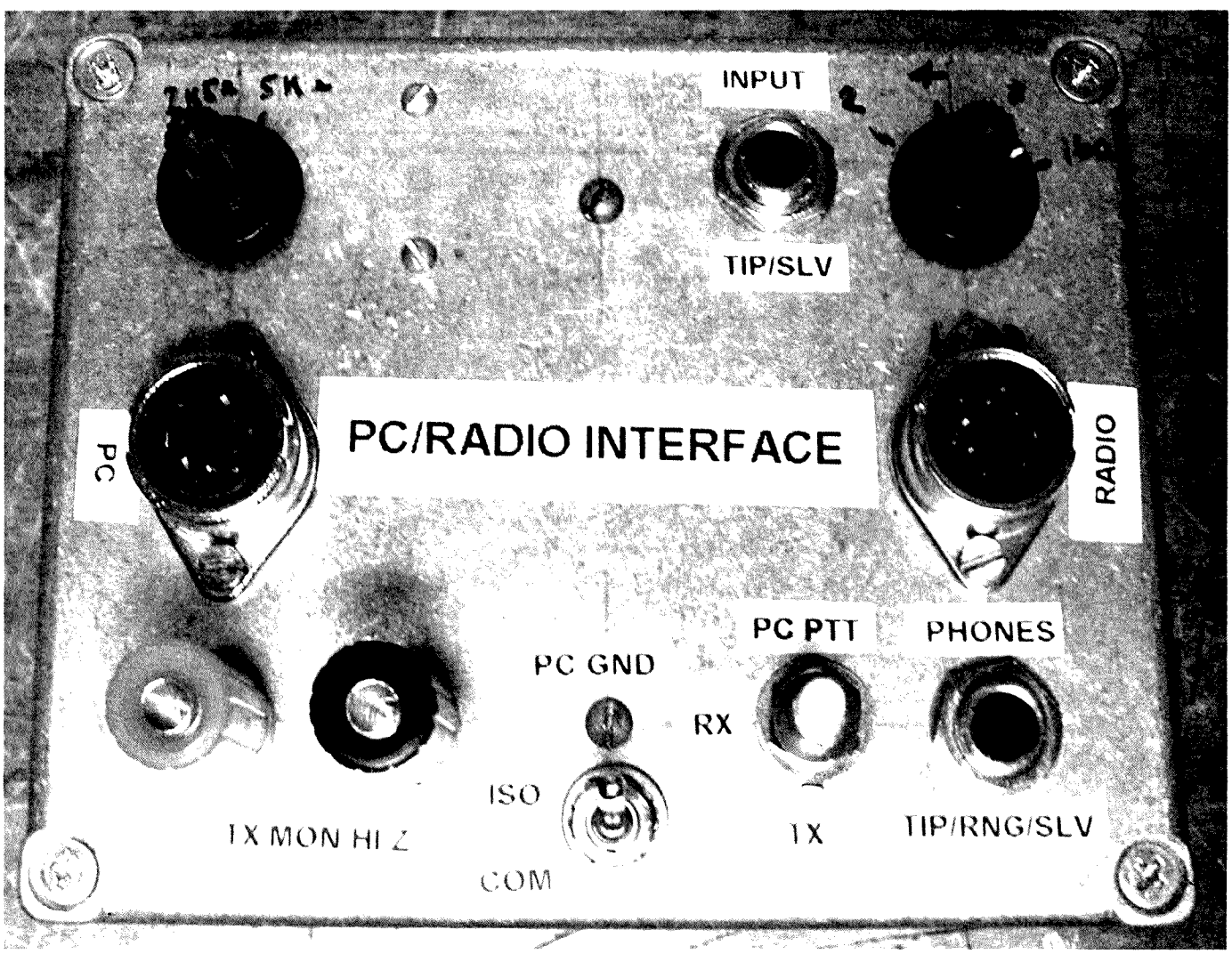


Figure 4: View of PC interface.

R1 is decreased so that more current will flow through the emitter diode.

Screened cable was used for all connections between the PC, interface, power supply and transceiver. For ease of connection, the audio and control connections were made through 5-pin DIN connectors. Figure 4 shows the completed interface unit.

Serial Port Options

The standard RS232 serial port that has been supplied on virtually all computers until recently appears to be becoming obsolete.

Modern laptop PCs, particularly the smaller units that would be especially attractive for field use, frequently only have Universal Serial Bus (USB) ports and no standard serial ports. This makes the PTT interface a bit more difficult.

A number of options exist, including the use of Voice Operated Transmit (VOX) and with care, particularly to avoid unwanted transmissions via a 'hot microphone'; this will work in most circumstances.

Other designs sample the audio output from the PC soundcard and process it to produce a signal that can drive the PTT control; see Reference 3 for details.

A simple solution can be to use an inexpensive USB-to-serial convertor cable which converts the USB port to a standard 9-pin serial port, complete with handshaking lines, which can be used to control the transceiver PTT line.

I have tested a number of Windows PSK packages and all have worked well when using my convertor cable instead of a standard serial port. I may have been lucky though, as it appears that not all USB-Serial Port adaptors are created equal.

The various internet discussion groups carry lots of messages to the effect that some applications do not work with various brands of convertors. It appears that those designed around the Prolific chipset are the least likely to suffer from incompatibility problems.

It may be that our use of the USB port for PTT switching purposes is so rudimentary that it avoids such problems but I have not been able to test a wider range of convertors. If you strike problems in using one in your interface, I suggest you try borrowing a few different brand convertors from your friends to see if you can find one that works for you.

Results and conclusion

Noise from the PC has been significantly reduced but not entirely eliminated. However, the remaining noise is at a very low level and does not interfere with the reception of even the weakest signals. The wideband noise emissions from the PC no longer cause any problems and the remaining noise appears to be specific frequencies that can be avoided if necessary.

Noise from the PC has been significantly reduced but not entirely eliminated. However, the remaining noise is at a very low level and does not interfere with the reception of even the weakest signals.

Some or all of the techniques described above may be necessary depending on the particular installation and severity of the problem. After applying the above in a sequence of steps the effectiveness of each step can be assessed and a decision made about whether more work is required to solve the problem.

Software packages such as Digipan, WinPSK or Winwarbler include a spectral display and this is very useful in observing and assessing the magnitude of the emitted noise as well as providing an excellent way of assessing the effectiveness of mitigation steps you undertake. General purpose spectral analysis programs such as Spectrogram will allow accurate measurements of the frequency and amplitude of noise components which may be helpful in identifying sources of noise.

I wish to thank Bill Maxwell VK7MX for his helpful suggestions during the writing of this article.

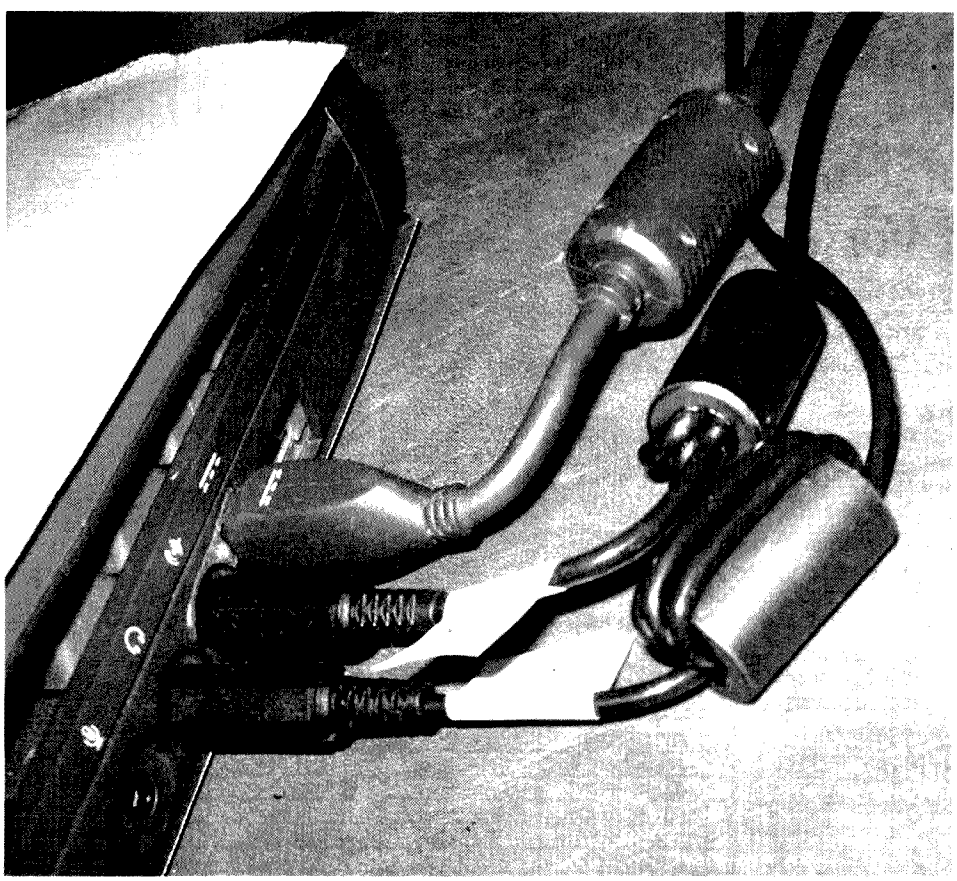


Figure 5: A view of the ferrite chokes and external PC screening.

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Jim Mitrenga N9ART. *A Flexible Digital-Mode Interface*. QST November 2000.

See www.powerbox.com.au for various power supplies.

ARRL Handbook, 2008, Page 19.47, *An Improved Digital Communication Interface*, circuit attributed to Larry Coyle K1QWand first published QST, April 2005.

ar

Over to you

Silent Key - Alan Peake VK2ADB

I was of course very saddened to learn of the death of Alan Peake VK2ADB, whom I had known since working with him in Adelaide in 1989/90. I was heartened by the generous tribute paid by Bill Steptoe in his obituary which you published recently.

I first knew Alan when I arrived as a new migrant in 1989 and worked with him on several 'interesting' projects. I should like to add a couple of anecdotes to Bill's tribute to give people some wider perspective on a man who was, in my opinion, an absolutely superb engineer and whom I am proud to have known as a very good friend.

On one project, the details of which are not relevant, we had the need to collect waveform data at high speed. The problem was that there were only limited tools available: these being a LeCroy 400 Msample/sec digital sampler, with two channel inputs, and an IBM PC/AT clone microcomputer with a clock speed, if I remember correctly, of 20 MHz.

I set about proving that the PC could interface to the LeCroy using the high level tools available, and this was done relatively straightforwardly. However, it was almost impossible to sample at anything higher than a fraction of the required rate because the slow bus speed of the PC and the even slower high-level code available. I was looking for a 'proper' PC pretty quickly.

I made Alan aware of this problem because I thought that he might have an idea of where we could either source more memory for the sampler or a better computer. However, he pulled a very large rabbit out of his hat when, the following Monday, he arrived at work having re-written the data collection software in 80286 machine code, including a home-brew utility to enable the data to be stored in the extended memory.

This was very good work. What made it even better is that it started with Alan's purchase on the Saturday of a book on 80286 machine code instructions - he had never done anything like this before.

What resulted not only saved the project money but actually worked VERY well. Alan also demonstrated in his quiet manner his tremendous capability to dive into first principles and sort out a problem.

Some years later, Alan took up Amateur Radio and obtained his callsign. The next thing that I heard was that he had built a 'Third Method' SSB transceiver out of spare parts, the sort of project that would daunt many with access to extensive lab facilities, yet Alan, as far as I know, did this in his house in the Snowy Mountains. I am sure that it would have been excellent and I know that he valued the friends that he found in the Amateur community greatly.

I shall remember Alan Peake as a friend who shared a passion for technology without bounds. He would and could tackle almost any problem and do so with enthusiasm and never be knocked back by trivial difficulties.

As several former colleagues have remarked, Alan was a Good Bloke and I am very proud to have known him.

Ian Beeby G8OGJ (formerly VK5ZEM) **ar**

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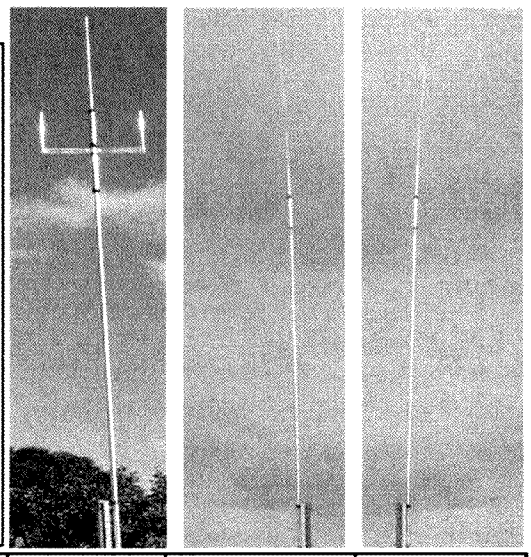
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An active loop receiving antenna for 1.8 - 4 MHz

Drew Diamond VK3XU

In locations where it is impractical to erect a conventional antenna, or where local noise is a problem, a popular alternative is to use a small receiving antenna. Some enthusiasts favour either an un-tuned or broad-band voltage-probe (or 'whip'), while others prefer an un-tuned loop, either of these then followed by a broad-band amplifier to raise the signal level to near that obtained from a conventional antenna.

A problem with broadband antennas, particularly when operated just above the broadcast band at 1.8 MHz, is that, in addition to wanted signal(s), a host of powerful, unwanted, out-of-band signals are also applied to the receiver's input. If the receiver's front-end signal handling ability (inter-modulation and pre-selectivity) is less than very good, then various undesirable effects will almost certainly occur.

If the antenna is resonated at the receiving frequency, however, the natural selectivity of the circuit will greatly attenuate the strength of out-of-band signals before they are presented to the front-end.

Apart from positioning, the whip offers little discrimination against locally generated noise, whereas a tuned loop can usually be oriented to obtain a worthwhile, and often remarkable, improvement in signal-to-noise ratio (Reference 1).

Offered here are details of a simple, tuned, balanced loop antenna for sensitive listening between about 1.75 and 4 MHz. Internally generated noise is low, thus allowing sub-microvolt signals to be heard.

Circuit

A seven-turn, 280 mm square, 'pan-cake' coil of 46 micro-Henrys is resonated by a two-gang broadcast type variable capacitor between (about) 1.75 and 4 MHz (it was found by experiment that this loop yields a measurably higher 'Q', and better sensitivity than a ferrite-rod/ loop-stick).

The frame of the capacitor is connected to chassis ground, thus forming a balanced tuned circuit which ensures that the loop is only responsive to the magnetic component of the incoming wave (simple unbalanced circuits may respond slightly to the electric component also, thus skewing the null in direction-finding applications).

For an electrically (and physically) small antenna, a substantial amount of amplification is required to raise the signal level to a value similar to that obtained from a 'full-size' one. Initial pre-amplification is provided by a balanced (or push-pull) pair of ordinary 2N5484 FETs (Figure 1).

The job of interfacing between the drains of the FETs, and the unbalanced coax line to the receiver's input, is done with a 'long-tail' pair differential amplifier (References 2 and 3).

The discrete component configuration shown is modelled upon the classic CA3028 chip (unfortunately, no longer readily available), which provides further robust RF amplification of incoming signal(s). Their collectors are coupled to the receiver's input by use of a broad-band transformer, whose bifilar wound (p)rimary provides a balanced load to the collectors of the long-tail pair. Signal is extracted via a 4-turn link (s)econdary winding.

continued over page

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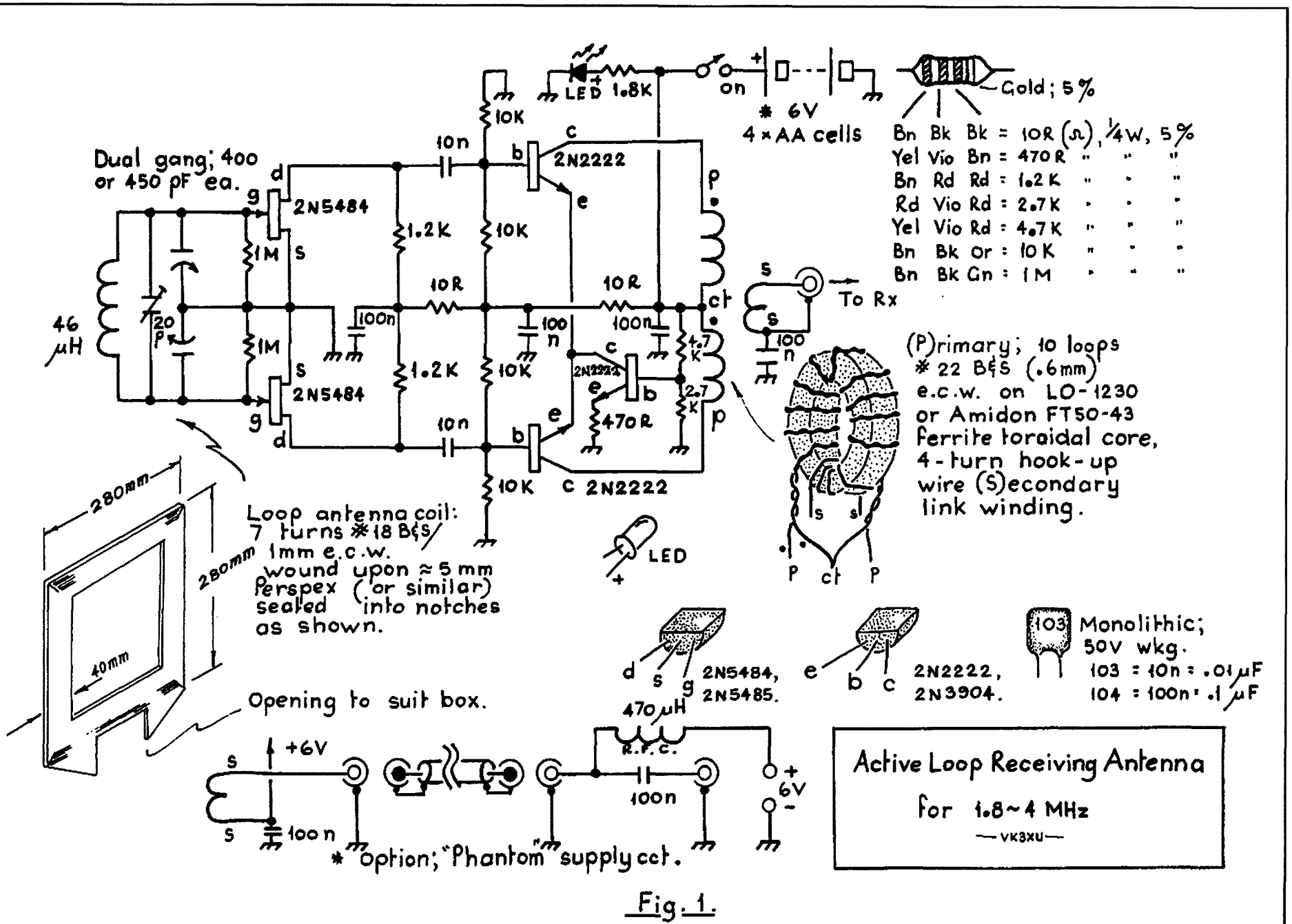


Fig. 1.

Figure 1: Schematic of the active loop receiving antenna for 1.8 - 4 MHz.

Construction

The prototype model is housed in a water-proof Jaycar ABS plastic box measuring 115 x 90 x 55 mm, P/N HB-6126.

The amplifier components are accommodated upon a 'paddyboard' (Reference 4) circuit board measuring 88 x 79 mm. A suggested layout is depicted in Figure 2 and Photo 2. Alternatively, any preferred wiring style (such as 'ugly') may be employed, provided that component leads are reasonably short, and a 'ground-plane' circuit board is used.

Use super-glue, or preferably hot-melt glue, to affix the pads/strips upon the circuit board, whereby a tiny sliver of solid glue is attached to the underside (fibre) of the pad. Melt the glue evenly with a soldering iron, then place the pad/strip in the exact spot required. If you need to move a pad, apply the iron to the copper side of the pad to soften the glue, then remove and re-position as required.

The seven-turn antenna loop coil is made with 18 B&S (1 mm) enamelled copper wire (ecw) wound upon a frame of 5 mm 'Perspex' (or similar low loss material – plywood as second best), as shown in Figure 1. The wire is wound side by side, alternated front to back, into 45-degree notches formed with a hack-saw in the frame at four places. One such notch in the upper part is pictured in Photo 3. The antenna assembly may be attached to the box in a manner similar to that illustrated in Photo 1, where a bead of hot-melt glue has been applied to both sides at the join.

The variable tuning capacitor, visible in Photo 2, is a small 400 + 400 pF dual-gang MSP part salvaged from an old Australian broadcast set. These are fairly common around the swap-meets. Or you could use a similarly ubiquitous Philips 450 + 450, or a Roblan 450 + 450 pF. It may be that your capacitor can be fitted so that the spindle emerges at the side of the box, rather than the front.

The broadband output coupling transformer may be made as follows. Take two 370 mm lengths of #22 B&S/0.6 mm ecw. Fix them, jointly, at one end in the jaws of a vice. Twist the free ends together similarly, then clamp in the chuck of a hand-drill. Whilst maintaining a tension on the pair, crank

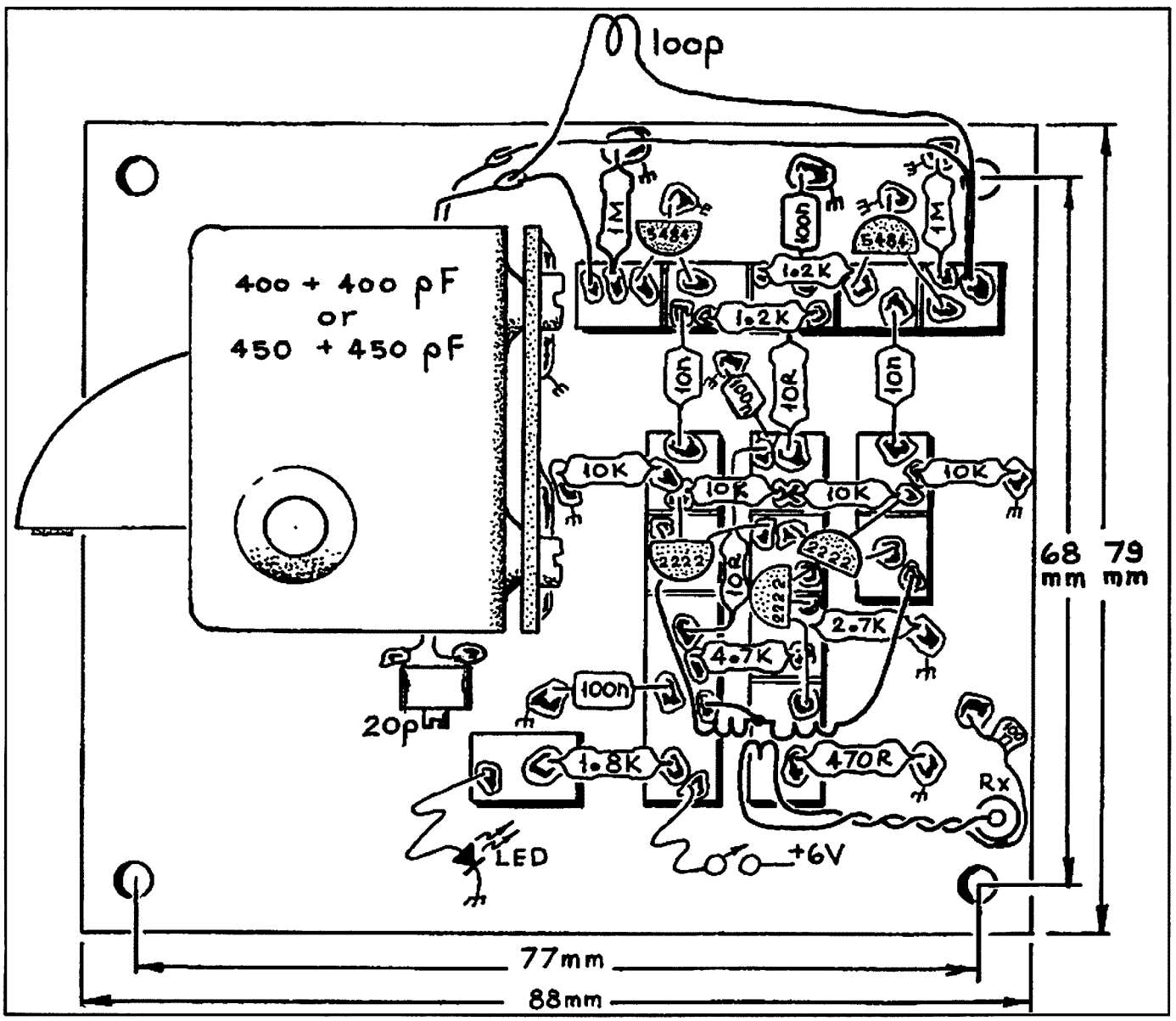


Figure 2: Suggested layout of the components on the 'paddyboard'.

the drill until you have about three twists per 10 mm. Now give the drill a firm pull to 'set' the bifilar pair. Carefully wind the pair on to a Jaycar LO-1230, or an Amidon FT50-43 toroid - about 10 loops should fit nicely, leaving a gap for the four-turn hook-up wire link (s)econdary winding.

With a multimeter set to read ohms, identify the two (p)rimary windings, and then connect the end of one to the start (dot) of the other, to form the centre tap (ct).

The 6 V battery of four AA cells may be accommodated in a holder, such as the Jaycar PH-9204. It can be attached to the lower outside surface of the box with small screws and nuts, or simply fixed there with hot-melt glue. The LED is fitted into the front panel to serve as an 'on' and battery condition indicator.

Operation

Inspect your wiring and soldering for quality and accuracy. Prove that the FETs and transistors are correctly fitted, and that your battery of AA cells is properly installed.

Connect the amplifier output to the receiver input using any reasonable length of 50 ohm coax cable. Tune the receiver to 4 MHz. Set the antenna's variable capacitor near minimum capacity. Switch on, and carefully adjust the 20 pF trimmer for a peak in noise/signals. Check that the antenna can be peaked at any frequency between 1.8 and 4 MHz. If conditions are fair to good, the set-up should sound quite lively. Any local noise/interfering signals should be reducible by careful rotation of the loop's plane.

My loop has been tested in various typical locations (some of them quite noisy) during our travels. It provides

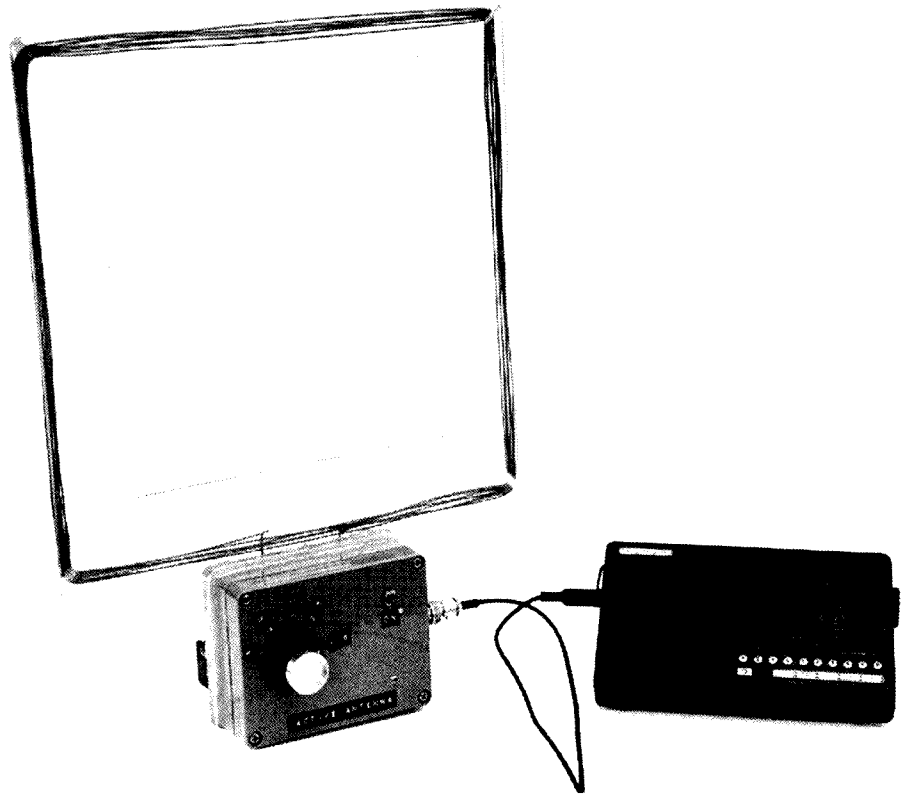


Photo 1: The active loop receiving antenna for 1.8 - 4 MHz in action.

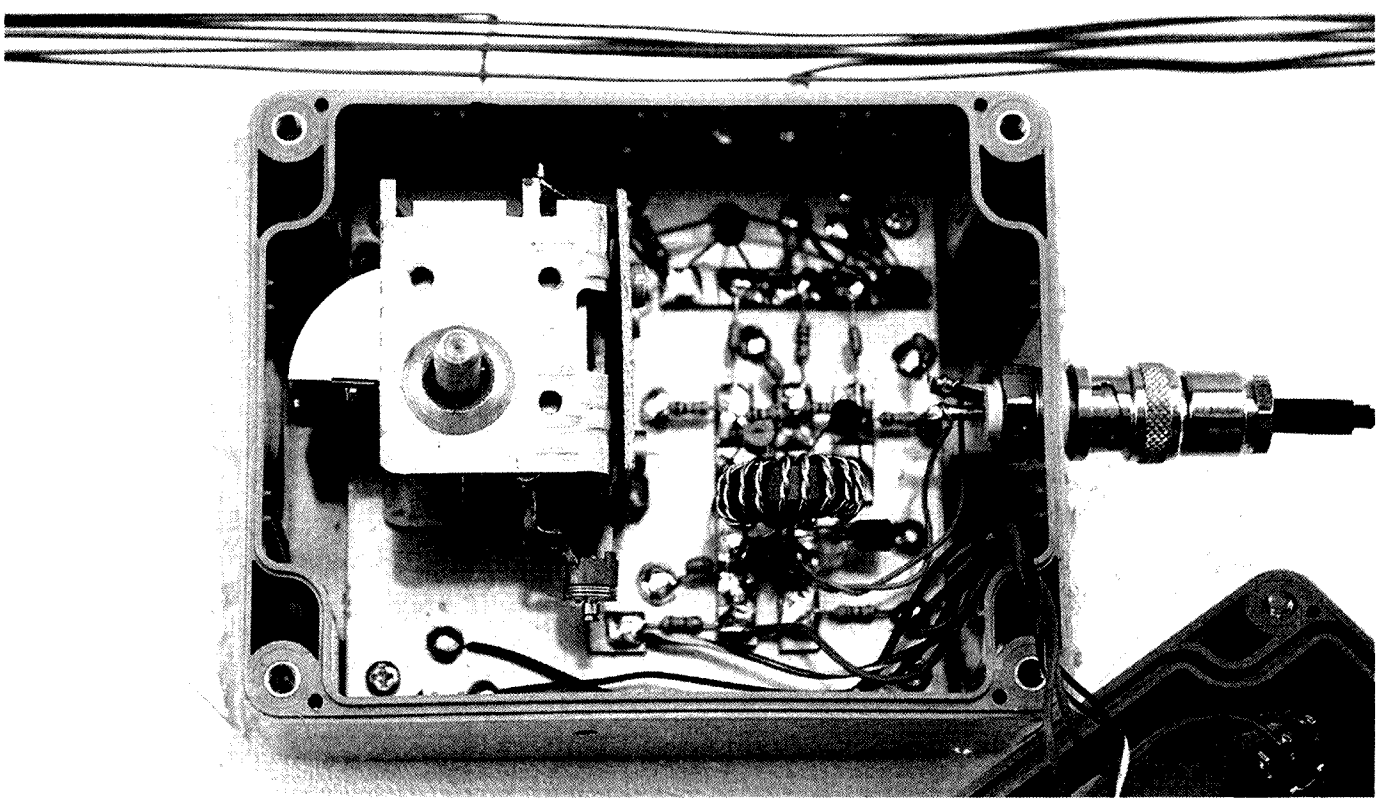


Photo 2: A view of the components mounted in the plastic box on the 'paddyboard' with the box lid removed.

(perhaps surprisingly) good performance indoors.

At a distance from electric power lines and appliances, however, a portable receiver/loop combo gives excellent results. For receivers that have a DX/local switch (such as the popular Sangean and Degen sets), it should be found that the DX position is seldom required (thus giving better strong-signal handling).

As long as a reasonable separation is maintained between a transmitting antenna and loop, no damage should be caused to the amplifier or receiver. However, an accidental transmission into the output of the device would probably damage the amplifier.

Counter-intuitively, perhaps, the null is through the axis of the loop (that is, when the loop is 'broad-side on', see Reference 1).

A suggested circuit is included in Figure 1 to provide 'phantom' power for remote operation. The loop must not be allowed to get wet. For permanent use outdoors, therefore, it is suggested that the antenna be housed inside an inverted plastic bucket, or similar contrivance.

Parts

All the ordinary components are available from our usual parts suppliers, including Altronics, Electronic World, Jaycar, Rockby and Semtronics. Sources for the ABS Box, toroidal core and variable capacitor are mentioned in **Construction** above.

You may well find (as is the case in nearby Ringwood) that off-cuts of Perspex/acrylic sheet are available from the scrap-box of your local plastic sign maker, free for the asking.

I am not in the parts business. Nevertheless, if, after earnest efforts, one or two items remain elusive, do phone me on (03) 9722 1620, or drop me a line, as it may well be that I have spares on hand.

References and Further Reading

1. "Small Loop Receiving Antennas"; Joseph Carr, *Electronics World*, November 2000.

2. *The Art of Electronics, 2nd edition*; pp 98 ~ 104, Horowitz & Hill, Cambridge University Press.

3. *Experimental Methods in RF Design*: pp 2.16 ~ 2.18 (excellent), Wes Hayward et al, ARRL.

4. "'Paddyboard' Circuit Construction - Revised", *Amateur Radio*, May 2005.

Photos by Andrew Diamond

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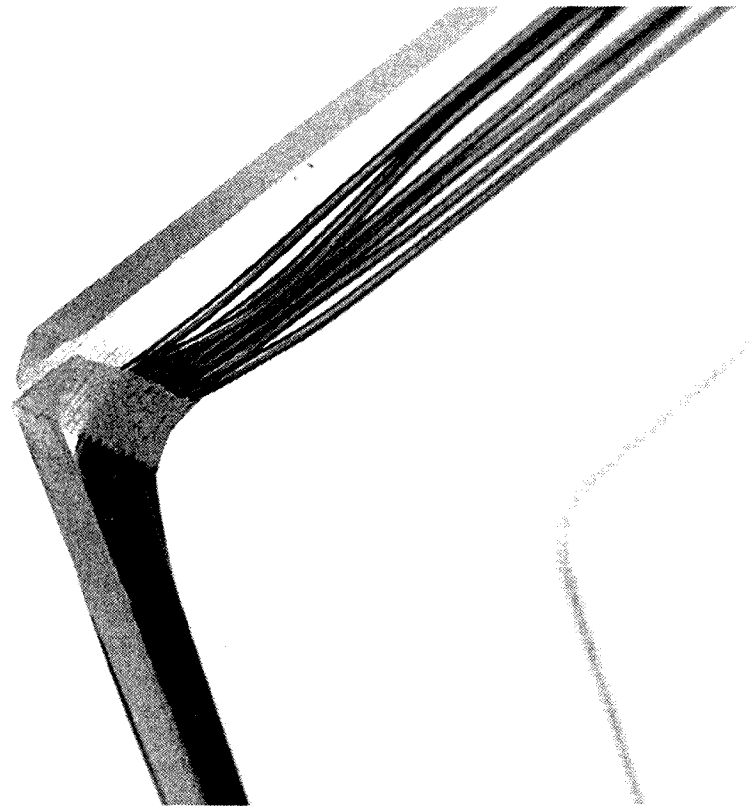


Photo 3: One corner of the loop, showing turns wound side by side in the notch.



A transverter for 2.4 GHz

Andrew Davis VK1DA

A transverter for the 2.4 GHz band was built in the week prior to the 2008 Spring VHF/UHF Field Day. Its design was based on separate modules for the functions of mixers, filters and amplifiers, standard kit modules and surplus coaxial cables and connectors.

Introduction

This article describes how I came to build a transverter for 2.4 GHz in the week prior to the 2008 VHF/UHF Field Day contest. It uses a design approach that could be adapted for any microwave band.

Why did I even consider this project? The increasing interest in microwave bands in the VK1 area and the high scoring rate for microwave bands meant that if I added 2.4 GHz to my Field Day station, I would gain an extra band, earn extra points in my field day log and, I hoped, inch closer to Doug VK4OE's score.

I did not expect to work long distances with a one to two watt signal, I just wanted to make a handful of contacts on an extra band.

Components and modules

Some useful components for this type of project had been purchased during the previous year, some found via the advertising and auction website eBay. com.au. Items purchased included two bandpass filters centred on about 2.3 GHz and a 10 MHz oven-controlled crystal oscillator. These oscillators can be used as a frequency reference for a microwave Phase Locked Oscillator (PLO).

I had also purchased from *MiniKits* a kit for a transverter sequencer for controlling a multistage transverter and a kit for a microwave Transmit/Receive (T/R) antenna relay using a small surface mount relay, suitable for power levels up to 10 watts at 2.4 GHz.

Ted Garnett VK1BL had built some amplifiers using the *MiniKits* experimenter boards and low cost Monolithic Microwave Integrated Circuits (MMICs), for the receiver RF amplifier and low level transmitter amplifiers.

While researching PLOs Ted had also found on eBay a Phase Locked Oscillator (PLO) that could be ordered for a variety of frequencies including 2256 MHz. This frequency is required for the Local Oscillator (LO) in a transverter giving a 2400-2404 MHz range when used with a 144-148 MHz transceiver as the intermediate frequency (IF).

He had also experimented with the one to two watt output stages of Comwave mixer/amp/power amp modules also being sold via eBay. These components had proven to work well and were ready for use in a project.

Between us we had the main components needed for a 2.4 GHz transverter. The question was whether those components could be transformed into a working unit and when it would be done. Ideally it should be completed in time for the coming summer Field Days, the first being the Spring VHF/UHF Field Day in mid November 2008.

In August 2008 there seemed to be plenty of time and other things took priority. However early in November the imminent VHF/UHF Field Day focussed my attention more closely and I decided to try to build something for use during that event.

The design

Figure 1 shows the block diagram of the transverter.

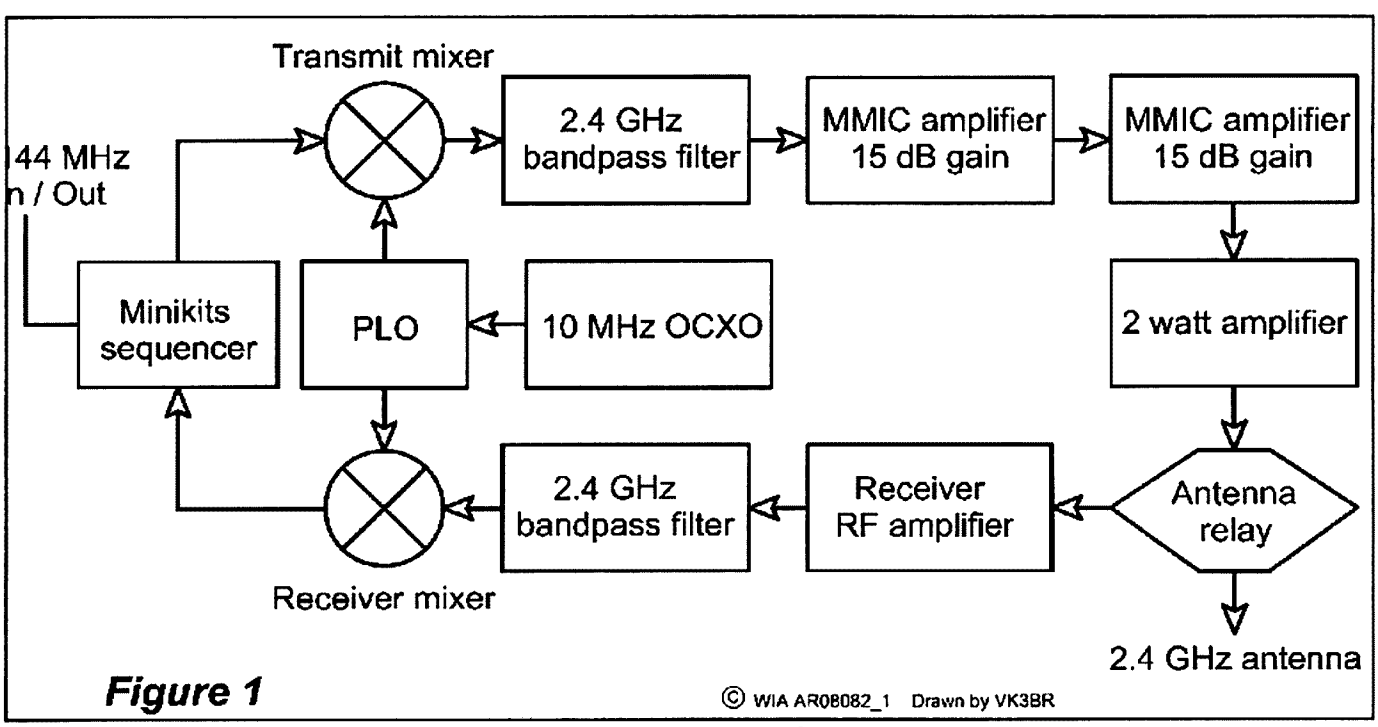


Figure 1: The 2.4 GHz transverter block diagram.

The key to the frequency conversion is the local oscillator signal, provided by a PLO producing a 2256 MHz signal for both mixers. This device is quite small, measuring about 25 mm by 15 mm and produces a signal that is proportionally as stable as the 10 MHz reference signal from the OCXO.

This method of producing the LO signal is significantly simpler than using a crystal oscillator and multiplying it many times to the final desired frequency, with accompanying filters and amplifiers.

As can be seen from the photos at Photos 1 and 2, using a preassembled PLO makes the LO part of the project physically very simple with only a small PCB to install in a shielded box and connect input, output and DC supply.

The LO signal of 2256 MHz combined with the FT-290R IF radio to provide a 4 MHz range, from 2400 to 2404 MHz. The frequency used for local contacts was 2403.1 MHz, which was obtained by tuning the FT-290R to 147.1 MHz. This is in the FM part of the 2 m band, but there are no FM repeaters on that frequency in my normal operating areas.

The output of the 10 MHz OCXO was higher than the rated input level of the PLO, so an attenuator was built from ordinary carbon film resistors and added to the output pins on the OCXO. The output of the PLO was a bit higher than desired for the mixers (+7 dBm), so the splitter providing the LO to the two mixers was designed to attenuate the PLO output by about 5 dB.

The transmit driver amplifiers were built by Ted using two *MiniKits* experimenter boards.

The output level from the mixer, with +7 dBm LO and about 0 dBm IF drive on 144 MHz, was about -7 dBm and a further 4 to 5 dB was lost in the filter. The +15 dBm available for the power amplifier was higher than needed. The drive level could have been reduced by inserting 6 to 10 dB of attenuation between the driver and power amplifiers.

An alternative was to reduce the IF drive to the mixer using the level control on the sequencer, which was the approach I took. I adjusted the 144 MHz drive level to the point where output did not increase, took that as the compression point and backed the drive off a smidgeon.

The FT-290R was set to low power which is rated at 300 mW output. This is still far more than the transverter requires and some simplification could be achieved by changing the 300 mW setting to about 10 mW.

The receiver RF amplifier stage was also built by Ted using the MGA86576 MMIC. On the test bench a -120 dBm signal produced good audible signals in the FT-290R and this was considered adequate sensitivity given that the output power of the transmitter was only one to two watts. There was no need to have a moonbounce level of receiver performance with a low power transmitter.

The low level amplifiers and the receiver RF amplifier all worked best at nine volts so the sequencer was supplied nine volts from a subregulator. Precision voltage regulation was not really required for either the sequencer or the RF amplifier but is readily provided by a three terminal regulator. I decided to use a Jaycar general purpose adjustable regulator board (purchased as a kit consisting of a PCB and about 10 components).

As the relay board was very light it was not mounted separately onto the case but merely connected to the three semi-rigid cables and left floating in mid air. The board did not appear to move at all when mounted on the cables and bolting



it to a panel would have complicated and lengthened the connections. The cables are stiff enough to provide more than enough strength and stability for this application.

Transmit/Receive changeover switching is triggered by the FT-290R, which puts a +5 V DC voltage onto the antenna output when in transmit mode, as well as the RF.

This DC voltage triggers the sequencer to change from receive to transmit mode, first turning off the receiver RF amplifier, then changing the antenna relay, then enabling the final amplifier, then switching power to the transmitter amplifier stages and switching the IF signal over to the transmit mixer.

The *MiniKits* sequencer also caters for the DC voltage switching used by the Icom IC-202 series, which work the opposite way, the DC voltage appearing on receive and going to zero on transmit. The sequencer also has an RF actuated input which operates whichever of the DC methods is in use.

A sequencer is probably overkill for a low powered transverter but I wanted, in the future, to cater for increased output power from a different final amplifier.

The filters were originally tuned for about 2.3 GHz but were readily re-tuned with the aid of a microwave sweeper, tuning first for an acceptable waveform on a sweep display and then fine tuning for maximum return loss (or minimum SWR) with a 50 ohm load. After this tuning no further adjustments were made to them.

The final layout of the transverter can be seen in Photo 2, showing the remaining components other than the OCXO and PLO shown in Photo 1. Most of the RF connections are made using semirigid coaxial cables with SMA male connectors, which are available in various lengths as surplus items.

Timing

The project was started on the Saturday a week before the Field Day. Ted checked the PLO and mixer, looking for the optimum IF drive level into the mixer and checking on the OCXO drive level into the PLO. A test of the receiver mixer was also made.

Assembly of the sequencer commenced on the next afternoon and was completed after several sessions of about one hour each. Early in the week I visited Jaycar and purchased a cabinet, some hardware and the sub-regulator kit.

By Thursday night prior to the Field Day I had assembled the sequencer and regulator, mounted all modules into the cabinet and had installed the RF sockets and a DC connector. I had not yet tested the sequencer, which caused concern the next day.

I took the partly assembled box back to Ted's place on Thursday night and by 12:30 am all remaining modules (OCXO, PLO, power amplifier, bias supply board) were mounted and ready for testing. We were able to check out the receiver sensitivity but the DC switching for the transmitter stages had not yet been completed.

The next morning I spent an hour completing DC wiring from the sequencer to relays and the power amplifier bias supply. Finally it was transmitter test time and I first tested the sequencer to check that all DC switching was working correctly. At that point I found the sequencer was not responding to the incoming DC voltage from the FT-290R. I had to stop and get ready for the day's work, but having reached this point I did not want to drop the project just because of a few components or soldered connections on the sequencer.

At lunch time I went home for an hour and commenced tracing DC voltages on the sequencer board. After fixing two non-soldered joints, the sequencer was operating correctly and I could measure

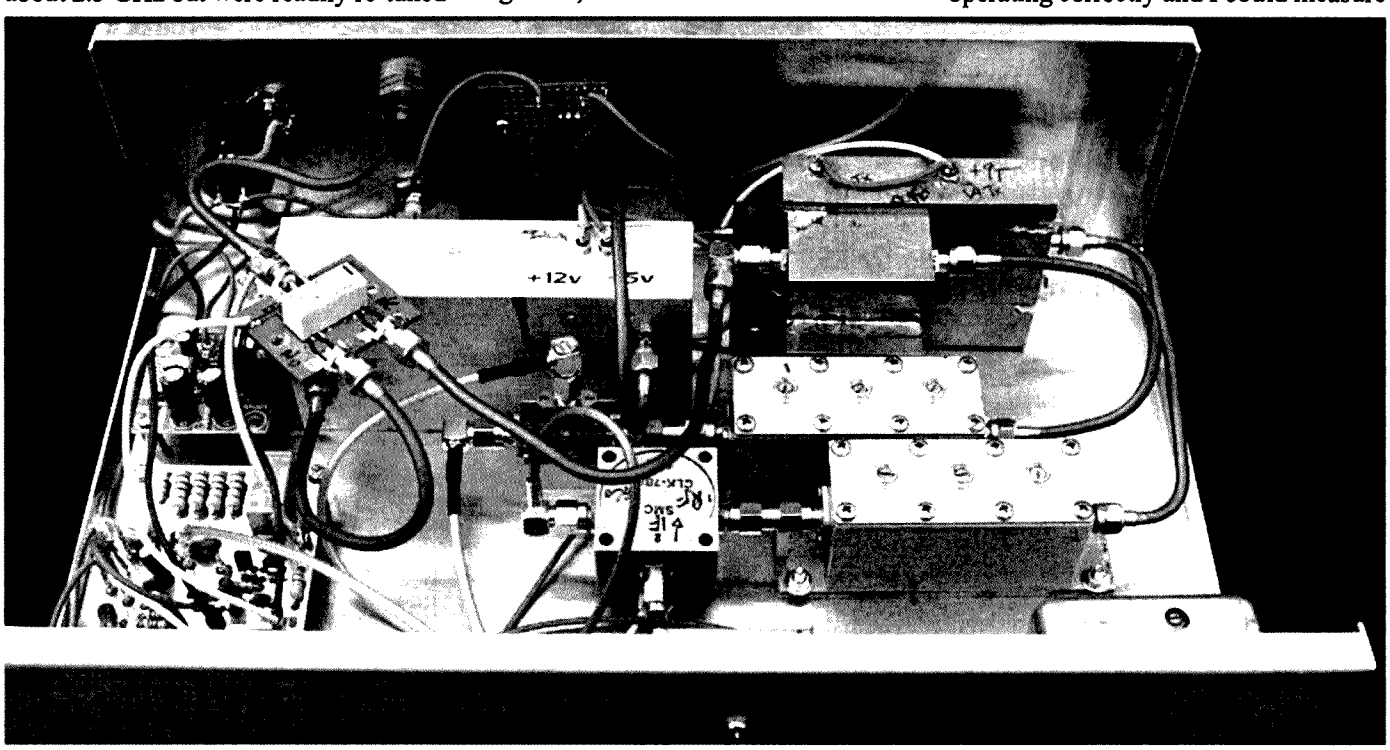


Photo 1: The main components of the transverter. The sequencer and subregulator are on the far left, the two mixers are shown attached to the 2.4 GHz filters and the low level amplifiers to the rear on the right. The transmitter power amplifier is in the aluminium box just under the small circuit board suspended on the coaxial cables, which contains only the antenna relay. The -5 V supply is on a veroboard mounted on the rear panel. The connectors on the rear panel are the DC input, the 2.4 GHz antenna connector and the 144 MHz input.

all the output voltages being enabled by the sequencer when the FT-290 was keyed up.

I connected a HP432A power meter (another recent acquisition) to the antenna socket of the transverter via 30 dB of attenuators. The 144 MHz input from the FT-290R was connected via a 5 metre length of RG-58 coax, the intended configuration for the Field Day.

With the FT-290R in SSB mode, I pressed the TX button and heard all relays switch over, then spoke a word or two into the mike and saw the power meter move. This looked good, so I switched the FT-290R to a constant carrier and adjusted the drive level from the sequencer to the TX mixer.

Due to the excessive gain in the TX amplifier chain the output from the sequencer could be set at just above minimum for an indicated +4 dBm on the power meter. Adding the 30 dB of the attenuator this indicated an output power of +34 dBm or about 2.5 watts.

I knew that the 20 dB attenuator was not necessarily accurate at 2.4 GHz. It had BNC connectors and was unlikely to be accurate at that frequency. However I knew there was RF power coming out of the box and I was then able to continue preparations for the Field Day.

The outcome

The transverter performed well and gave me some valuable points during the Field Day. I have published some photos from the field day, at *http://www.flickr.com/photos/exposite/*

Configuration

The transverter was deliberately designed to be operated remotely and supplied with only 13.8 V DC and the 144 MHz drive signal from the FT-290R IF radio. This permits a short feedline from the antenna to the transverter, minimising losses in the feedline.

Although only 4 metres of LDF440 cable was used, even good quality cable has measurable losses at these frequencies so it is important to minimise losses on both transmit and receive.

The feedline from the IF radio was operating at a much lower frequency of 144 MHz so could be much longer, even in relatively lossy cable like RG-58, as any losses are readily made up for in the transverter. In future Field Days I plan to mount the transverter on the mast just below the antenna, to reduce losses further.

Future development

There are a few potential alternatives and changes to the design of this transverter.

Reduce the module and connector count by sharing one mixer and filter between the transmit and receive signal paths. This would require a diplexer for the IF and 2.4 GHz signals. An article by Paul Wade W1GHZ (Reference 2) showed how this can be simply achieved using resistors to isolate the signal paths sufficiently. The 3 dB loss is easily made up by the gain available from MMICs, the "BC108s of microwaves". This would make the transverter even simpler, with only one mixer and one filter required.

The power amplifier uses a MOSFET that will be damaged if the drain supply is connected in the absence of the gate bias supply. The sequencer has a suitable input that could lock the transverter in receive mode if the bias is not present.

As noted above, the multi stage sequencer is probably not necessary for a low power transverter. A two relay system such as the simple sequencer design by G3SEK would be adequate. The only really important delay is to the IF drive on transmit, to ensure no relay

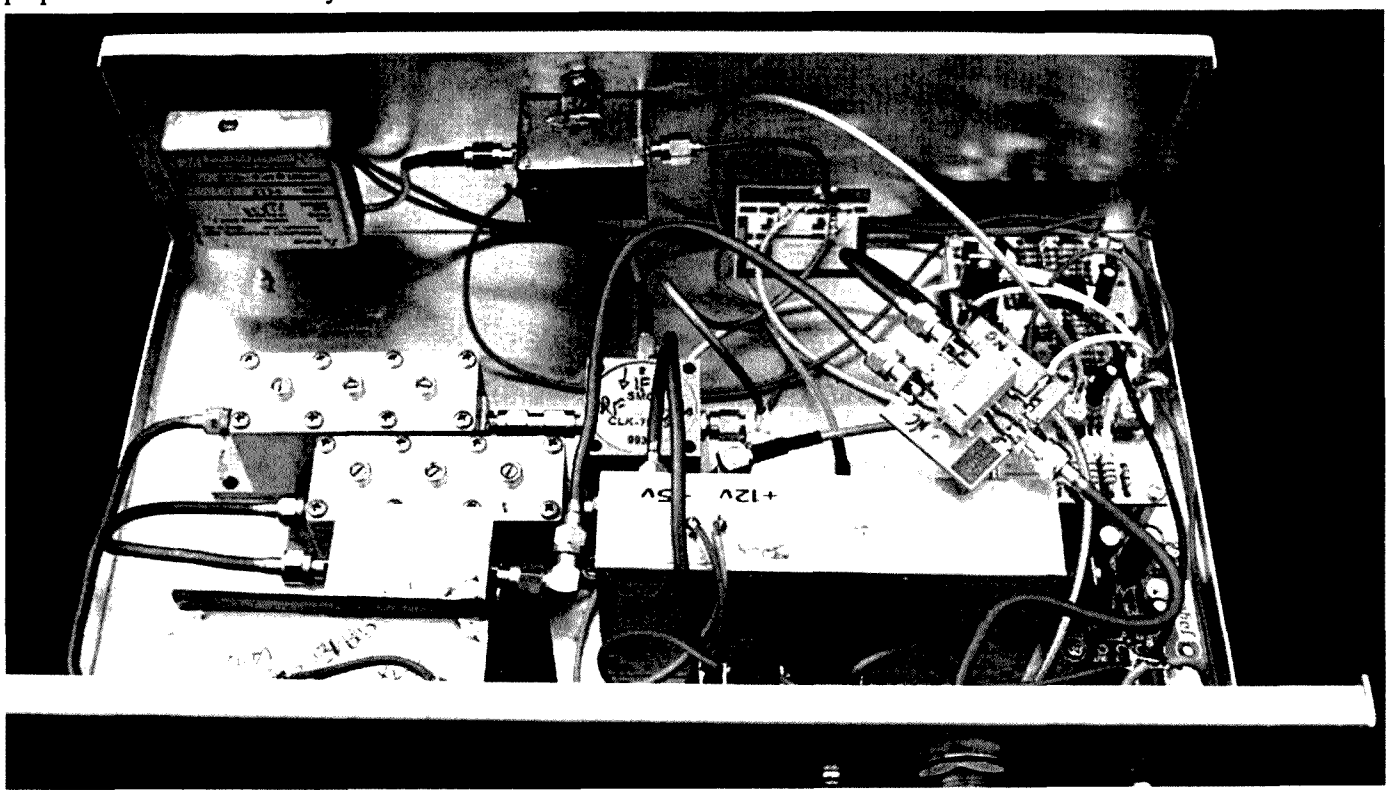


Photo 2: A view of the transverter from the rear, showing the 10 MHz reference oscillator on the far left and the phase locked oscillator board in its small brass enclosure. The PCB next to the PLO is simply a splitter with some attenuation, with outputs to both mixers.

other than the low level input relay is ever hot-switching.

No polarity protection was installed in the original transverter. The 9 V regulator board does have a series diode, so the only components at risk are those not switched by the sequencer and running from the 13.8 V supply. However this is not a sensible risk to take with equipment that will be assembled and connected in the field. With a fuse in the power lead, a reversed diode across the DC input connector is all that is required. This avoids the loss of voltage (typically 0.6 V) across a series diode. For low power equipment the simplest protection method is a bridge rectifier on the DC input.

With a stable 10 MHz oscillator in this transverter, it is feasible to use the same signal to stabilise other similar transverters. The relative frequency error would be predictable. For more demanding accuracy and stability, the OCXO can be replaced by a GPS-stabilised 10 MHz source. There is enough room in this transverter box for a GPS receiver.

The sequencer could also be shared between multiple transverters with outputs switched appropriately.

Alternatives

Alternatives for the transmitter power amplifier include other surplus amplifiers ranging from 10 watt to 25 watt levels. Some are being offered by Australian sellers on eBay.au.

Pyrojoseph on US eBay offers a range of modules including 25 watt amplifiers. If you want to start at the 2 watt power level, *MiniKits* offers a kit for a 2 watt amplifier for this band.

For the PLO there are alternatives becoming available. Andy Sayers VK2AES described a design for a series of PLO boards at GippsTech in July 2008, for a variety of frequencies between one and 10 GHz. I plan to use those boards for future microwave projects. Watch for an announcement about those boards. The PLO with acceptable phase noise seems to be the critical part of any microwave transverter and finding a suitable source solves the majority of the technical problems for the higher bands.

The bandpass filters I used were disposals items from multimedia distribution systems equipment or similar. However experimentation by Ted VK1BL with home made interdigital filters has shown that quite acceptable results can be obtained provided they are assembled with care and they are tuned correctly.

For higher power levels it would probably be advisable to use additional filtering before the power amplifier stage to ensure spurious outputs are kept to an acceptable level.

The amplifiers are "linear" so harmonic output and intermodulation distortion should be very low. (In addition, the second and higher harmonics may be out of the amplifying device's operating range so its ability to generate harmonics is presumably limited.) Nevertheless most commercial equipment on these bands have filters everywhere because microwave gear is typically co-located with other equipment and clean outputs are essential.

If the same filtering is applied to the receiver then the receiver will be equally well protected from image responses and intermodulation products in its mixer.

Parts sources

10 MHz OCXO. Various types are on *eBay*. I bought a Trimble OCXO from China for about AU$70 posted.

PLO with output on 2256 MHz. Source: *eBay.com*.

Mixers. One of the mixers was built on a simple board using a standard microwave double-balanced mixer rated for this frequency, with SMA connectors soldered to the board. The mixer has several tiny transformers and a matched set of microwave diodes on a chip. The other mixer was a commercial microwave mixer which Ted loaned for this project.

Filters. I bought these surplus filters from *Garry Nosworthy* at Nowra, via eBay. I do not know if he has more.

MMICs and experimenter boards for receiver and transmitter amplifiers: – *MiniKits*.

RF amp for receiver: MGA86576 – *MiniKits*

Connectors: panel mount N socket with semi-rigid cable and SMA plug: I purchased a few of these from *RF Resale* (Alan Devlin, VK3XPD) at GippsTech.

Semi-rigid cables with SMA connectors: purchased from Alan Devlin.

Sequencer board and microwave relay kits – *MiniKits*.

9 V adjustable regulator board: *Jaycar*, (this could be built using any suitable regulator chip mounted on perf board, veroboard, blank PCB, "paddyboard" style or even tagstrips. Only required if the amplifiers cannot be run from the (typically) 13.8 V DC supply.

Hardware: case, standoffs, nuts and bolts: *Jaycar*.

Building gear for the microwave bands

A key to success in projects like this is being able to get components and modules checked and measured so that you know that outputs are on the right frequency, levels are correct, and so on. Getting access to good test equipment makes this project much easier and results come quicker.

I had never built any equipment for microwave bands before so this was a new experience for me. However this project showed me that it was quite feasible once I had the right components and some help with testing and alignment. I plan to build similar equipment for other microwave bands.

Summary

The 2.4 GHz transverter presented here was designed and built using proven available modules, using surplus components where possible. No circuit diagram is included, as the components available to other builders may be different. Hopefully, publishing the project in this way will encourage others to have a go at getting some equipment running on the microwave bands. My professional work is in computing and I have no training in RF or microwaves, so if I can do it, so can you.

The transverter did what I wanted it to do. I made about 12 contacts with two local stations during the Field Day, with the pleasure of using equipment I had largely built myself. This was very satisfying.

This was a typical amateur radio project, thrown together at the last minute, with a very rewarding outcome.

Acknowledgements

This project succeeded only due to the support I received from Ted Garnett VK1BL. Thank you very much, Ted!

References

1. *MiniKits* is run by Mark Kilmier VK5EME in Adelaide. Mark publishes a catalogue of kits and components at affordable prices and provides an excellent mail order service. See *www.minikits.com.au*

2. Paul Wade W1GHZ, 2008, *Microwave Multiband Transverters for the Rover*, see *http://www.w1ghz.org/*

3. eBay.au, see *www.ebay.com.au* on the web. **ar**

Maatsuyker Island IOTA OC-233 – and a 'face to face net'

Roger Nichols VK7ARN

Tad VK2LNX and Suzanne VK2FSMJ completed their three month term as caretakers on Maatsuyker Island early in February.

Maatsuyker is 10 kilometres off the southern coast of Tasmania and its southern tip is the site of Australia's most southern lighthouse. Maatsukyer is IOTA OC-233.

Prior to Tad and Suzanne's departure from VK2, WIA club coordinator Ted VK2ARA asked WICEN Tasmania (South) if they could provide support, if required. As it turned out, all that was required was to arrange an air drop of essential components. Negotiations around the extra helicopter fuel necessitated by the additional load, comprising a couple of resistors, were quickly handled by Stu VK7NXX and Tad had his resistors on the next chopper flight.

Once Tad and Suzy had established themselves and set up their amateur station, WICEN held a weekly 'Maatsuyker net' with them. Contact was made each Thursday evening on 80 metres, missing only one when Tad was unable to get his wire back in the sky during a particularly strong and extended roaring of the Forties.



On a rare rain-free day, the Lighthouse at Maatsuyker Island, over-looking the Needles. (Photo Jeff Jennings LoA)

Hopefully, Tad and Suzy will tell their own story in a coming edition of *Amateur Radio* magazine.

In order to have a 'face to face net' before their return to the even bigger island to the north of the big island, WICEN arranged to meet for an afternoon tea in Margate, south of Hobart, for a final QRN free sked.

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Photo 1: The 'face to face net' – L-R: Scott VK7HSE, Roger VK7ARN, Peter VK7TPE, Stu VK7NXX, Suzy VK2FSMJ and Tad VK2LNX.



Photo 2: Suzy VK2FSMJ and Tad VK2LNX. No! Suzy is not wearing a Tasmanian Tiger skin.

Women in Radio cover story

Christine Taylor VK5CTY

New ALARA President: Tina VK5TMC

Tina is the new President of ALARA. She is also the co-ordinator of the Australian YL International Meet to be held in Adelaide in 2012, so it is time we knew a little about her.

Tina was born not far from Seattle, Washington State. She was the only girl in a family of five but insists that she was not spoiled!

Tina trained as a teacher in the US and then decided to come to Australia as an exchange teacher, to experience a different country. She decided she liked the climate and the people in Australia so she has only been back to the States for visits since then.

Her links with her family are strong so she, and now also her OM Robert VK5ZHW, go to the US every two or three years. They have now seen many different parts of the country but hope one day to spend about six months there to really see places they have only visited so far. Currently they are in the US, and have included the Dayton Hamvention. We will hear more about that in the future, in the columns of AR and in the ALARA newsletter.



New ALARA President Tina flanked by Vice-President Lesley VK5HLS and 2nd Vice-President Shirley VK5YL.

Tina followed her OM Robert into amateur radio. Robert had trained as an electronic technician as a young man but Tina had no prior appreciation of amateur radio until Robert got his licence in about 1990.

He used to talk to her about the classes he was attending, and through the classes and the radio he met a number of YL amateurs so Tina decided to go to these classes herself.

She attended the classes run by Geoff Taylor VK5TY in 1993 and passed her exam in May the next year. She was immediately also joined up as a member of ALARA. As part of a very active group of YLs in VK5, Tina has taken an active part in many of the events of ALARA and AHARS, the club to which most of the YLs in VK5 belong.

Until recently neither Tina nor Robert had been on the HF bands though they were quite well known on VHF, but now that they have an aerial up and also have enjoyed operating portable in the John Moyle Memorial Field Days, they are heard more often.

Tina taught mathematics and computing at several Adelaide schools, notably at Aberfoyle Park and Mount Barker High Schools. She has now retired and is discovering what else to do with her time!!

She will be an excellent President of ALARA and Co-ordinator of the YL International and, although the event is not until 2012 she has already set up a website www.ylinternational2012.110mb.com At Dayton she made a presentation about the Meet at the YL Forum and met a number of the Buckeyes Belles etc, there.

At the moment the website is very primitive but it is one that will be worth keeping an eye on if you are at all interested in attending and having a chance to meet YLs and their OMs from around the world. Yes OMs are definitely part of the YL International Meets. They enjoy the activities as much as the YLs do.

As President of ALARA Tina has a number of new faces on her committee and she will be ably supported by her Vice-President Lesley VK5HLS and 2nd Vice-President Shirley VK5YL, both of whom have been members of ALARA for a number of years and are part of the active group in Adelaide who meet once a month for lunch. Already they and the others at the lunches are exchanging ideas for 2012, so Tina will have plenty of help.

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A Wonderful Old Timer

Jim Linton VK3PC

Mavis Stafford VK3KS – 70 Years an Amateur

Grand lady operator, Mavis Stafford VK3KS has been a radio amateur for 70 years and a luncheon on the first weekend of June in Melbourne was held in her honour.

The occasion was organised by the Australian Ladies Amateur Radio Association, ALARA, which she has actively supported since its formation in 1975.

The Mavis story begins in a small farming settlement of Lallat North in Victoria's Wimmera district when a school teacher Ivor VK3XB boarded at her parent's home.

The young man set up a battery powered rig in his lodgings much to the interest of Mavis' brother Artie who started studying for his licence, but soon had to leave the farm to find work.

Mavis at this time had quietly learnt the Morse code and with some study under Ivor's guidance passed her licence test on 30 May 1939 to be issued the callsign VK3KS on 6 June in that year. Within three months she had made 110 contacts using a crystal controlled rig with 3 watts output, before World War II brought an end to amateur radio activity.

In 1943 Mavis married Ivor Stafford. With the resumption of amateur radio after the war the couple continued to share the enjoyment of the hobby, both being fine CW operators who also enjoyed Phone.

Eventually they relocated to Box Hill in Melbourne's eastern suburbs and were proud to have a shared OM and XYL QSL card. Ivor was a fine gentleman and his contributions included that of being the WIA Victoria Outwards QSL Officer, ably assisted by Mavis. He passed away in 1999.

Mavis has won a large number of contest awards. With Ivor they were stalwarts of the BERU Commonwealth Contest over decades. In 1966 Mavis became one of the few ladies in the invitation-only First Class CW Operators' Club. She was one of the early members of ALARA that helped establish the organisation which encourages females to become radio amateurs. Many of its new members in the past three years have entered the hobby through the Foundation Licence.

As the ALARA Historian, and with assistance from Ivor, she produced the organisation's history for 1975-89. Mavis held many an ALARA meeting at the Stafford home and she was also the Award Custodian. ALARA bestowed on her Honorary Life Membership in 1983.

Mavis was pleased to see so many friends and newcomers to amateur radio at the luncheon. WIA President Michael Owen VK3KI praised her contributions and presented her with a framed WIA President's Commendation. ALARA Vice President Marilyn Syme VK3DMS talked about the voluntary work of Mavis and her support of others, before presenting an ALARA plaque marking her 70th anniversary.

See also the photo on the Inside Front Cover of this issue.

Photos by Robert Broomhead VK3DN.

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Jean VK3VIP and Mavis VK3KS admiring the designs on the celebratory cake, or is it that they just have designs on the cake.



Jean VK3VIP, Mavis VK3KS, Marilyn VK3DMS and Monique VK3FWPZ. From a recent licensee to one with 70 years on air, it looks as if ALARA will continue to thrive.

Silent Key

Bill Sadler VK3AMH

Late on the evening of 20th December 2008 Bill Sadler VK3AMH passed away.

Just two months prior Bill and Jan had made the trip from Warrnambool, their last QTH, to Ballarat for the HamFest to catch up with his many ham friends, in what the family recognized may be his last outing to a ham event.

Bill first developed his life long interest in amateur radio as a student in the mid 1940s following the seeds of interest being planted by a favourite uncle during his childhood.

Bill's professional career was electrical engineering, working at the then State Electricity Commission of Victoria. When being recruited as a graduate engineer, Bill was offered the chance to work in the communications branch but declined in favour of being a distribution engineer and reserving his passion for radio as his hobby rather than making it his work.

Like many of his era Bill had a desire to learn, experiment and design his own gear, building transceivers, PAs, towers, power supplies and antennas for the multitude of bands he liked to operate.

For many years Ballarat was home base for Bill and his family and was widely known for the station that he built with ham partner John Lewis VK3HW. Over the years the Ballarat shack was a local landmark, with many visitors landing on the doorstep of the family home enquiring "Is this BTV-6".

The station underwent many transitions and upgrades over the 40 odd years they operated together with the finale of their creative endeavours being 45 m of ex-SEC transmission tower decked out with three massive log periodic antennas that Bill and John designed and manufactured themselves in the workshop. The small one, with a 6.1 m boom covered 50 to 54 MHz, the next one at 15.5 m covered 14 to 30MHz and the largest, being 21.5 m long, dealt with 7 to 10 MHz.

Later, upon retiring to Nagambie, Bill was to design and build four 15 m towers for a rhombic antenna that covered about 2 hectares.

Throughout his amateur radio career Bill supported the community with his hobby, sharing his passion for radio with Scouting groups, providing communications in emergencies to the CFA during bushfires; contacts to Mexico during a severe earthquake and regular scheds into Antarctica when official communications were primitive or unreliable. Having lived overseas in the late 50s and relying on amateur radio friends in Canada and North America to set up scheds through John for Jan and Bill's parents, the favours were returned for many visitors throughout the years who visited and used the power of the station to push a strong, clear signal into North America and Europe.

Bill also had the time to share his passion with many succeeding generations of aspiring hams giving advice, guidance and being a role model.

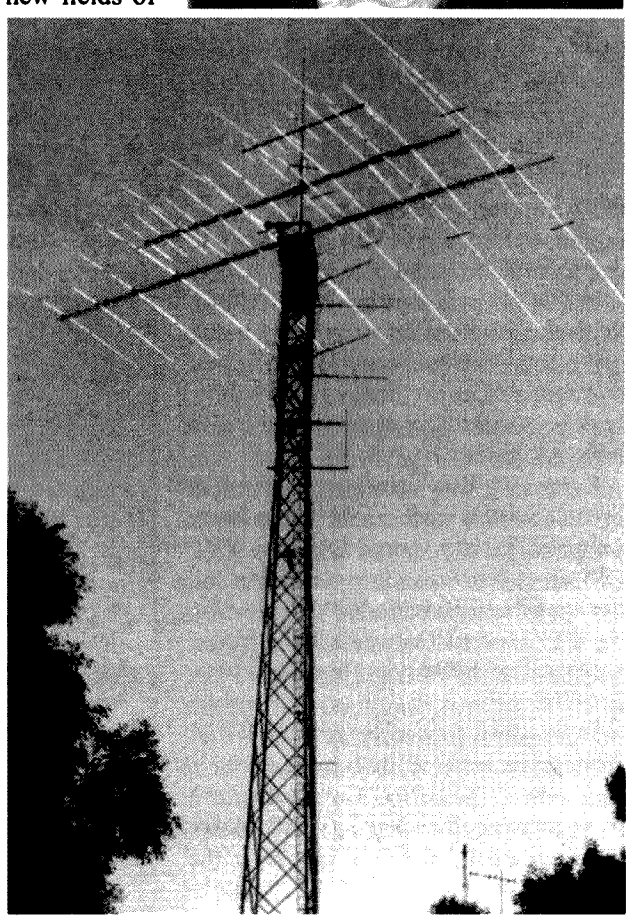
With his final retirement move to Warrnambool, and a city block, the high powered HF gear was retired and Bill embarked upon new fields of endeavour, developing an interest in the 5 and 10 GHz amateur microwave bands and forming strong friendships with Russell VK3ZQB, Colin VK5DK and Alan VK3XPD as they collaborated in the construction of microwave gear. This new sphere of interest culminated in the mother of all field trips when Jan and Bill took off to North Queensland in 2004 to eventually meet up with Colin, Alan and Russell and jointly set about establishing some VK4 and VK2 long distance records for the 5, 10 & 24 GHz bands.

Right up until the last few months Bill was still active and creative, building and testing more antennas and microwave PAs.

And so the antenna is parked into the wind, the brake locked and the power to the rig switched off the last time after a full and rewarding life and over 60 years of commitment and dedication to his passion and hobby; Dad, VK3 America Mexico Honolulu, rest in peace.

Murray Sadler **ar**





The 45 metre ex-SEC tower with the massive log periodic antennae erected by Bill VK3AMH and John VK3HW

The 'Hentenna' for six metres

Andy Williss VK5LA

Do you have a transceiver that is capable of operating on the 50 MHz amateur band, but do not operate there because you do not have a suitable antenna? This interesting antenna might be just what you need to spur an interest in this fascinating part of our amateur radio spectrum.

I came across this interesting design on the internet. This article is more about how I went about making the antenna and the great contacts I have had with it.

This article is all my own work, none of it has been 'cut and pasted' from the internet. All drawings and photographs are originals by me, and show the actual dimensions used in the antenna I constructed. All antenna software plots are from the actual design dimensions I used, not the program's demo files.

Just about all new transceivers available these days have the six metre band 'built in', with the same features and functions available at HF, and often with the ability to use the rig's on-board antenna tuning unit. Some rigs even have tone and DTMF capability for repeater usage as well.

The 50 MHz amateur radio band is one of my favourites. The spring and summer months when there is increased activity due to tropospheric and E layer 'Es' enhancement are peak times for six metre action while we are at the bottom end of the sunspot cycle. Indeed it is possible to work all Australian states (and maybe even ZL!) in the course of one day. The signals on the band can range from nothing, only hiss in the receiver, to anywhere between 20 over 9 to barely readable, then suddenly disappear just as quickly as they came. Maybe that is why they call six metres the 'Magic Band'!

Indeed, many enthusiastic six metre operators will remark to other hams not yet enlightened that when six metres is open, you can 'work the world with a bit of wet string'; perhaps, but you will do a lot better with a decent antenna!

Just what is a 'decent' antenna for six metres? You will probably get ten different answers from ten different amateurs ranging from a dipole, a quarter wave or half wave vertical, to a three element or more Yagi.

The Hentenna is not a new design. Japanese amateurs JH1FCZ, JE1DEU and JH1YST are credited for creating the Hentenna in the 1970s and developing the antenna to become a very popular six metre radiator widely used in Japan to this day. Outside Japan, the antenna was not generally well known until it was included in some popular antenna books printed in the last few years and some of the Japanese articles relating to the antenna were translated into English and published on the internet.

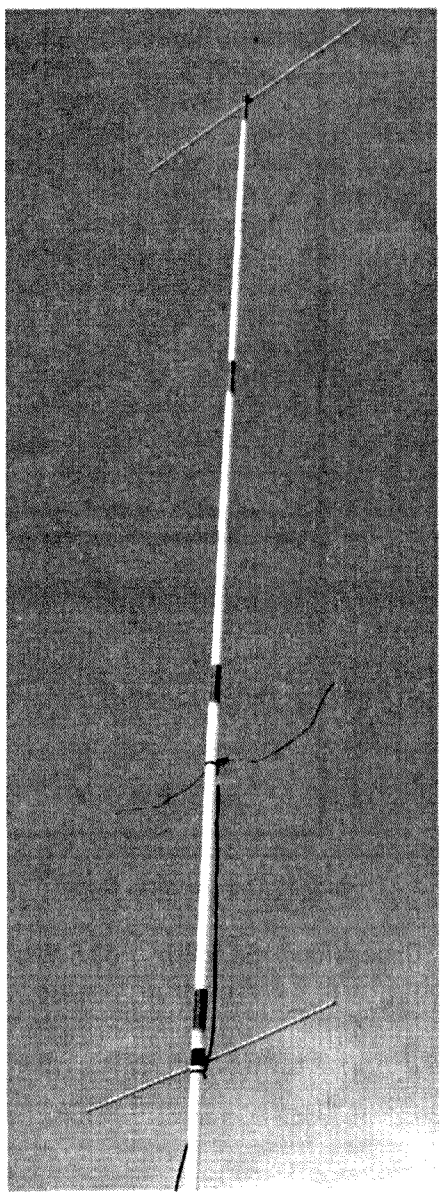
The name Hentenna comes from the translation 'Hen' meaning 'strange' in Japanese. Early on in its development, the theory and good performance were not easy to explain. However, modern computer modelling shows the antenna to be a good performer, and to have approximately 3.5 dBd of gain, with a radiation pattern similar to that of a dipole, with sharp nulls at right angles to the radiating lobes.

What is a Hentenna?

I will not go into the complex theory of the antenna, but Figure 1 shows the Hentenna as a loop of radiating material fed somewhere around 1/10 of a wavelength from the bottom of the complete loop. The larger vertical loop is the radiator while the lower loop acts as a matching section and to lower the radiation angle. Figures 2, 3 and 4 show the radiation pattern, SWR and Gain/ Front to back graphs, all plotted from the excellent free antenna modelling software 'MMANA-GAL'.

Building it

Table 1 lists the dimensions for the antenna for the six and two metre bands. Do not be too worried about exact



dimensions; although you should probably stick as close as possible to the measurements given, a few millimetres of inaccuracy should not significantly affect the operation of the antenna. (Table 1, Figure 1)

Construction of the antenna should be fairly straight forward. A wander in the shed with a coffee in hand and the grey matter churning will probably have most amateurs putting together the bits and pieces needed within a short space of time. You might need a trip to your nearest hardware shop if your junk box is lacking. The beauty of this antenna is the radiating loop could be wire, aluminium strip or tubing, copper wire or tubing, or any combination of the above - whatever you have in your junk box or antenna building inventory.

My version of the antenna uses a collapsible six metre long fibreglass 'Squid Pole' extended to four metres long as the centre support, and two lengths of 10 mm wooden dowel simply taped to the squid pole about three metres apart with electrical tape, as the top and bottom supports to hold the wire.

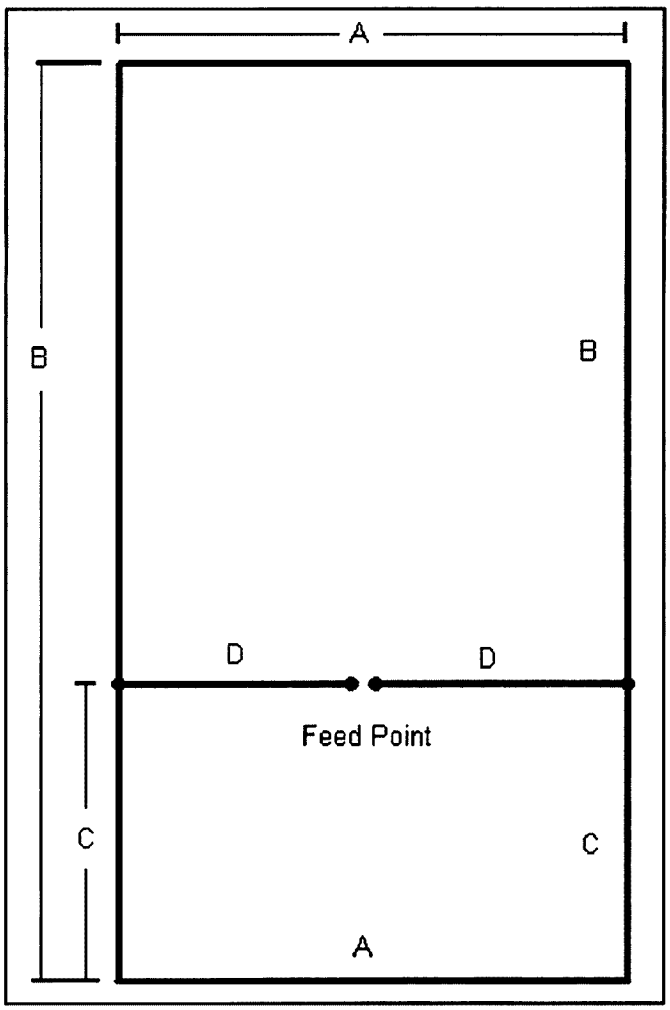


Figure 1: The electrical diagram of the 'Hentenna'.

Dimension	50.1 MHz	53.5 MHz	144.1 MHz	146.5 MHz	Wavelength
A	0.997	0.934	0.347	0.341	1/6
B	2.993	2.800	1.040	1.022	1/2
C	0.598	0.560	0.208	0.204	1/10
D	0.495	0.456	0.164	0.160	n/a

Table 1: All dimensions in metres

In my case, I did not want to drill holes or impede the function of the Squid pole in case I want to use it for another project. I used brass picture hanging wire for my Hentenna's radiating loop because it was available, cheap and you can solder to it!

The wire is strung around the 'frame' of the antenna supported by small brass screw eyelets screwed in to the ends of the timber dowels to hold the wire in place.

Those with a better stocked junk box than mine will use what they have available. Another method might be to use a piece of wooden dowel for the centre support and aluminium tubing, approximately 8 or 10 mm in diameter and mounted through the dowel as the top and bottom parts of the loop. Aluminium welding wire crimped to a lug could then be screwed into each end of the tubing top and bottom to complete the loop. Use your imagination; I am sure you will come up with a workable system.

Feeding it

Feeding the Hentenna is also easy, no fussy gamma matching, loading coils or trickery is needed.

I used two lengths of insulated wire stripped from a discarded piece of 240 V appliance cord (never throw anything out!). I made a simple terminal block where my 50 Ω coax attaches to the wires from an old piece of plastic discarded from the lid of a long dead Jiffy box.

I then soldered each end of the feeder wire to the loop wire after I had adjusted the VSWR to minimum. To protect the solder connections from the elements, I have found a product called 'Starbrite Liquid Electrical Tape' to work very well for insulating and protecting antenna connections from the elements.

The coax and terminal assembly was cable tied to the support mast in a couple of places to keep it firm but still allowing both the feed point wires to be moved up and down the loop wire to adjust for the lowest SWR before soldering the feed wires to the loop wires.

A word about coaxial cable

As we move higher up the amateur bands in frequency, the loss of the coaxial cable being used becomes more important, and should be taken in to consideration.

At 50 MHz, especially if the rig is a reasonable distance (for example, greater than 30 metres) from the operating position, consider using 8813, RG8, RG213, LMR240/400 or other low loss coaxial cable, so you maximize the amount of signal transferred when transmitting and receiving.

Using older RG58 coax cable might degrade the performance of this antenna if the distances involved are substantial.

Adjusting it

To adjust the antenna, simply place it on a temporary support so the feed point is at a comfortable working height, around 2.5 metres off the ground and as far away from surrounding objects as practical.

Remember, you are adjusting the position of where both wires attach to the loop. Keep everything symmetrical,

make sure both sides are the same distance from the bottom of the loop and you will not go wrong.

Using low power, announce your call sign and check the VSWR at your chosen frequency and note. If required, slide the feed point wires either up or down the loop wires to bring the VSWR to a low level.

You should easily be able to adjust the antenna to a VSWR reading of 1:5 or better. Remember to keep the adjustments small, say 10 mm at a time.

One mistake I made when initially trying to adjust it was moving the feed point wires too far each time. Keep the adjustments short from the starting position and it will be fine. My antenna has a 2:1 VSWR bandwidth of approximately 3.2 MHz.

So how does it perform?

I have tried several different radiators for six metres over the few years I have been active on the band. The antenna presented here is easily the best of the bunch in terms of simplicity and cost, but most importantly – performance.

From the moment I plugged the coax from the antenna in to the radio, I knew it was special!

Of all the antennas I have tried for six metres, I have always struggled to hear the VK5RBV beacon on 50.315 MHz. at 145 km to my east. Even before I had adjusted the VSWR, I was hearing this beacon loud and clear in the receiver.

Turning the antenna 90° to the beacon saw it disappear into the noise. This meant that the antenna had directivity.

I was also able to test the antenna on SSB with Doug VK5GA, located approximately 30 km away at Paringa, who gave me a gratifying 58 report off the back of his three element Yagi.

Turning the antenna at 90° to Doug saw his signal drop to 51, confirming the nulls off to the sides.

On the 28th and 29th of October, 2008, the first good 'Es' opening of the season occurred with VK4QB, VK4DV, VK4EK, VK2SJJ,VK4MA, VK2BXT and VK4FNQ all logged with good signal reports both ways.

The antenna will be coming with me when I will be operating portable for the WIA 2008 Spring Field Day.

See you 'on Six'!

References

"The Hentenna Revisited" http://www.hamuniverse.com/hentenna.html

"Hentenna" http://homepage3.nifty.com/lzk/ANT3.html

"Six Meters A Guide To The Magic Band" Ken Neubeck WB2AMU, ISBN 0-9705206-3-8

MMANA GAL software is a free download from http://mmhamsoft.amateur-radio.ca/mmana/

ar

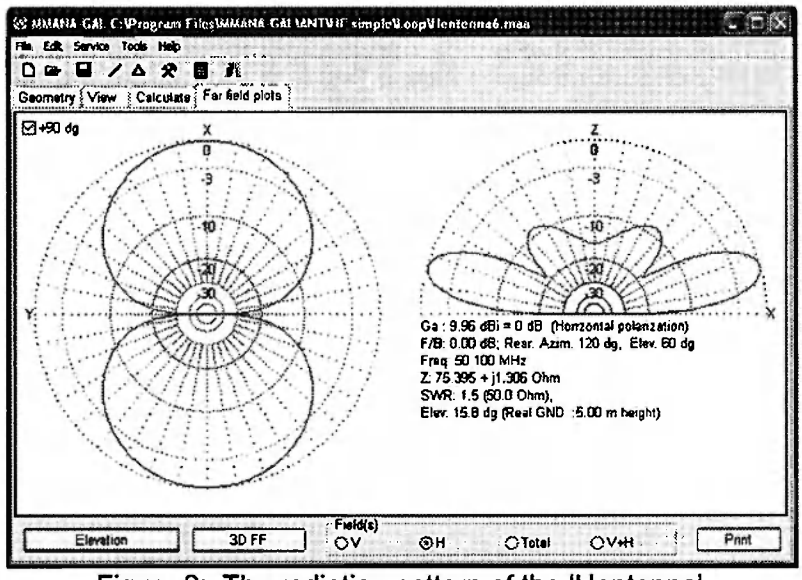


Figure 2: The radiation pattern of the 'Hentenna'.

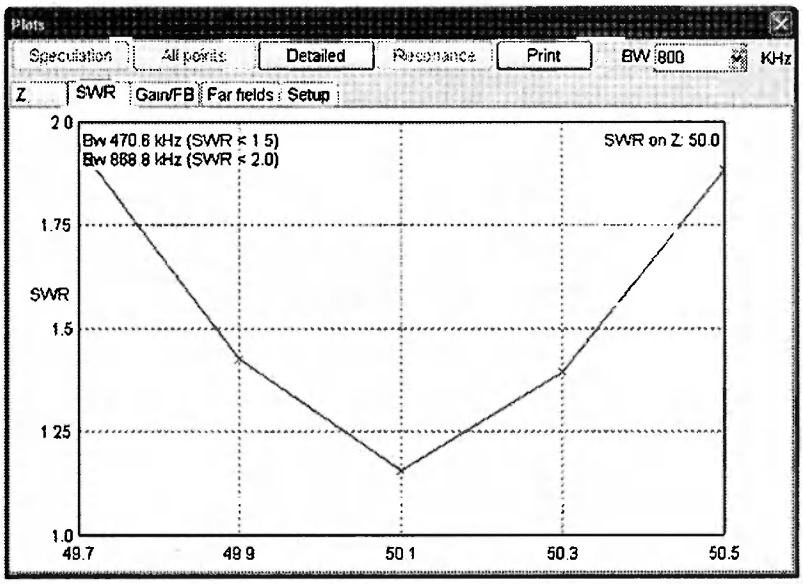


Figure 3: The SWR graph of the 'Hentenna'.

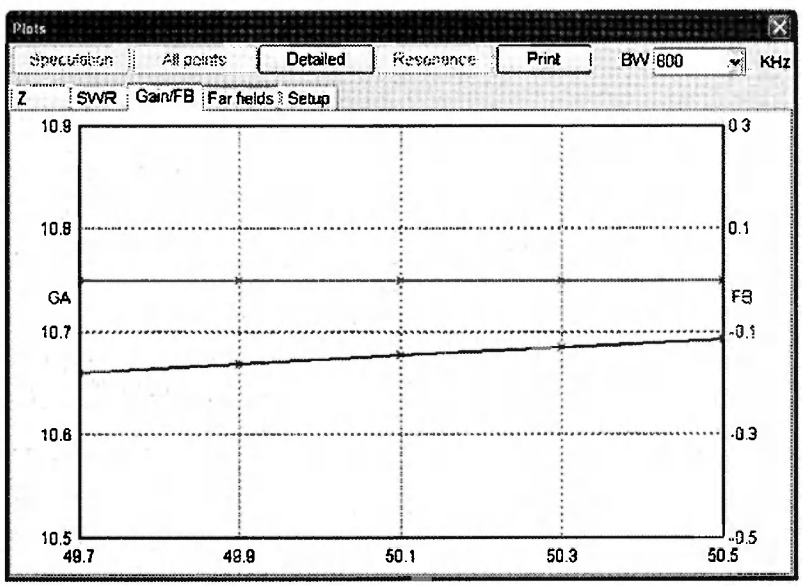


Figure 4: The gain and front-to-back graph of the 'Hentenna'.

Currie Lighthouse, ILLW, King

Glenn Alford VK3CAM

As August 2009 fast approaches, I look back to that great ILLW time spent on King Island.

The island has two major lighthouses. Cape Wickham to the north is a major lighthouse constructed from local granite. Built in 1861, it is the tallest classical built light house in Australia, 48 metres. There is very little in terms of facilities and accommodation at this end of the island. But it is still worth the visit to a truly spectacular site, exposed to Bass Strait.

Currie lighthouse is located at the harbour entrance, only a short distance from the town centre. The lighthouse was constructed from pre-fabricated wrought and cast iron sections, and shipped from England. Erected in 1880, the lighthouse stands at 21 metres.

Currie is an ideal location for amateur radio operations, being located forward on a small spit of land, with very few surrounding buildings. But best of all, there is no RF noise or interference.

It was to be a small team that year to hit the island, John Longayroux VK3PZ from the EMDRC and myself. Accommodation was found less than a kilometre away from the lighthouse, in a refurbished fisherman's cottage, quaint but warm and friendly. Much like the island.

Having arrived on the island, the best mode of transport is a hire car. There are two companies on the island, but it is always handy to book ahead. Both offer airport service. While the town is not far from the airport, the car is invaluable when it comes to touring, which is another good reason to leave the 'big smoke' and become involved in these weekends.

Fortunately, with some support from the local manager we were able to gain access to the old brick maintenance shed, located about 50 metres from the lighthouse base. It provided an easy path to run the coax to the antennas. Being on an island, it can get windy and cold, but the heated maintenance shed was the ideal haven.

The antennas consisted of a wire dipole, and the favourite Cushcraft R7 vertical on a demountable pole. This would give us coverage on HF bands, and from this location with low noise levels. The rig of choice was an ICOM IC-775DSP, a robust box that simply needs to be plugged in. With built in tuner, power supply and two receivers, it makes an ideal rig, although it is a little on the heavy side.

So by Friday afternoon we were well established and ready to operate, with everything tested and in place. Over the weekend we worked mainly Australian and New Zealand stations, with a few DX stations. Propagation proved to be poor, total contacts around 80. But propagation is a bit like the weather, not much we can do about it, it will improve the next time.

It was still a great weekend, with quite a bit to see on the island. There is a good web site, www.kingisland.org.au that has lots of good information including accommodation options. Certainly you



Island

should find time to have a meal at the Boomerang Motel, with spectacular views over the golf course and Bass Strait.

The Cheese Factory, located not far out of town, is world famous for its produce, making it a definite stop. Crayfish can be bought from the blue concrete block building on the main road near the race course.

2008 attracted 406 lighthouse registrations worldwide. This is not a competition, no winners, but a good fun weekend, where we are all winners, including passing visitors that gained a short exposure to our great pastime. The web site for registrations and guidelines for the event is www.illw.net It is easy and simple to become involved, to choose a lighthouse, register, and circle the dates on your calendar. Finalise your detailed planning lists and make sure it all happens.

So this year's planning is underway for that one great weekend, 15th and 16th of August.

International Lighthouse/Lightship Weekend



An annual amateur radio weekend event

Organised and controlled solely by the Ayr Amateur Radio Group, Scotland.

This year's event - 15-16 August 2009

The basic objective of the event is to promote public awareness of lighthouses and lightships and their need for preservation and restoration, to promote amateur radio and to foster International goodwill.

Get all the details

from the official web site, maintained by Kevin VK2CE at:

http://www.illw.net/

Enjoy the camaraderie of the ILLW and also give out a few numbers in the RD Contest.

GMØ AYR
AYR AMATEUR RADIO GROUP

Below is a panoramic view of Currie Lighthouse, King Island

More Photographs and information on inside back cover



News from

Tim Mills VK2ZTM
c/- arnews@tpg.com.au

VK2

The **Manly Warringah Radio Society** has had to move club room and meeting location.

From June and for the next two months they will meet at the Terrey Hills Community Centre, Yulong Road, Terrey Hills, advises Richard VK2SKY, the Publicity Officer for the MWRS. This new location is about one kilometre to the north of the old club rooms along Mona Vale Road, McCarrs Creek Road and then right into Yulong Road. A map of the new location is on their web site.

The MWRS was one of the original community groups who met at the old radar site at Beacon Hill. When the Council sold the site and developing the Terrey Hills facility, the Society was invited to join them. Now, due to increasing demands for space by the emergency services on site, MWRS has to leave the Warringah Volunteer Services Centre.

This is a temporary arrangement while the Society arranges a permanent home for its radio room and workshop. The existing repeater services on two metres and 70 centimetres and the club's D-STAR repeater will continue to operate normally, though there may be temporary disruptions during the transition.

The meeting times are the same, every Wednesday at 2000 hours. The doors open at 1930 hours. Contact can be made on the club's two metre repeater 146.875 MHz, the club telephone 02 9450 1746 on the night or the web site www.mwrs.org.au The Society provides amateur radio in the northern beaches region of Sydney.

The **Oxley Region ARC** conducted their 34th annual Field Day over the June long weekend.

Numbers were down this year with 74 registrations recorded. The two day event started on a sunny Saturday afternoon with several fox hunts and a gathering in the evening at a local club for dinner. Sunday morning started cold and wet but became a fine and warm day.

Activities were at the Sea Scout hall, Port Macquarie, where several traders were present along with the usual array of 'disposals'. The club had on display its recent acquired communications caravan, now in its final stage of fit out. The club has a recently renovated car trailer surplus to their requirements. If you have an interest, contact the club at vk2bor@orarc.org

It is now six months until the annual Radio Expo at Coffs Harbour scheduled for Sunday 24th January 2010. This is an operation provided by the **Mid North Coast Amateur Radio Group**. Some of their members attended the Oxley Region field day with a range of the kits they have developed. Details of the Expo and the many group activities can be found on their web site: www.mncarg.org

This month the **Waverley Amateur Radio Society** will be holding their annual auction on Saturday the 18th July. The gates open at 0830 and the sale starts at 1030 hours.

The venue is in the clubrooms in Vickery Avenue, Rose Bay in Sydney's eastern suburbs. No catalogue is produced, but details of some of the items to be sold may be posted on the web site before the sale. The Society meets on the third Wednesday evening and has a project afternoon on the first Saturday each month.

In early April an article promoting the Club and amateur radio was published in the local paper – the Wentworth Courier – a copy can be found on the club's website www.vk2bv.org

Next month will be the annual Winterfest of the **Blue Mountains ARC** on Sunday 23rd August at Glenbrook in the lower Blue Mountains. Details will be available via VK2WI News and these notes.

Next month also has both the Lighthouse and Lightships operation and RD Contest on the same weekend. This makes an excellent opportunity to increase activity in both events. Register interest in the Lighthouse operation at the official ILLW website.: http://www.illw.net/ Take care that you go to the correct web page – another site in the US claims to be the "original" but is in fact a latecomer!

Amateur Radio in Sydney's north is provided by the **Hornsby and Districts Amateur Radio Club Inc.** They meet on the second and fourth Tuesday evening at the Mt. Colah Community Centre, Pierre Close, Mt. Colah. HADARC runs assessments for all licence levels – there is a form on the club's website www.hadarc.org.au or telephone Tony VK2BTL 02 9487 3383.

HADARC also has a page on Facebook. Users can search for "VK2MA". HADARC conducted their 32nd AGM in May.

The **Hunter Radio Group** is a long established Newcastle club and was originally the Hunter Branch of the NSW Division. They meet on the second Friday evening of most months at the NBN television studios, Mosbri Crescent, Newcastle. Starting time is 2000 hours. They have a news net on Monday evening at 1930 on 80 metres plus some Newcastle and Central Coast repeaters.

Planning is underway for the 2010 **Central Coast** Field Day - tentatively on Sunday 28th February. In their recent newsletter "Smoke Signals", Ray VK2HAY was urgently seeking assistance to conduct the event. It requires a lot of planning and getting enough personnel puts a strain on club resources. Maybe amateurs from outside the CCARC could offer assistance to lighten the load. The newsletter Editor of "Smoke Signals" is also urgently seeking technical articles. The club held its AGM last month.

The **St. George ARS** in southern

Waverley Amateur Radio Society
VI2BV90
1919 - 2009
Annual Club Auction
Saturday July 18
Auction bell at 10.30 am, doors open 8.30 am.
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Useful ham radio, computer and electronic gear.
Open to all who wish to buy or sell. All details at
www. vk2bv.org
or Simon VK2UA
02 9328 7141

News from

VK2

Sydney has had a long running weekly net on their repeater VK2RLE 6800 Thursday at 2000 hours. With a growing interest in SSTV this mode has been added at the end of the voice net.

The next T&T event at the VK2WI site will be on the last Sunday of this month – July 26th – in the morning. As usual in the afternoon the Home Brew and Experimenters Group hold their meeting. ARNSW provides a service for Deceased Estates and equipment donations to be processed and made available to members. For the recent May event, major equipment offers were listed on the web site – www.arnsw.org.au – at fixed prices. This worked well advised T&T Officer Mark VK2XOF and will be used in future offers. Nearer to this month's event, check out what is on offer on the web site.

At the first Council meeting for the incoming ARNSW committee, Beth VK2AO was elected President; Terry VK2UX as Secretary and Brian VK2WBK Treasurer. Other portfolios were Senior Vice President Mark VK2XOF and Junior Vice President Michael VK2YC. Publicity items go to Tim VK2ZTM. Dural and Broadcast Officer Mathew VK2YAP. Web Master Brian VK2TOX. State TAC Liaision Brian VK2WBK. Education Terry VK2UX. Membership Norm VK2TOP. Trash & Treasurer Mark VK2XOF. Shed Project Michael VK2YC and Tim VK2ZTM. Deceased Estates Michael VK2YC and Mark VK2XOF. Centenary liaison Michael VK2YC.

The incoming committee is investigating conducting most of its monthly meetings by electronic means to save the travelling that some personnel have had to undertake in the past. It should also make times for meetings more flexible.

Also under consideration is the future of the 1800 number that has been available for country members. Billing records show it is now rarely used. Membership Secretary Norm VK2TOP is writing to members who have become unfinancial to clarify their status.

Mentioned in the last notes was that Bob VK0BP had been making it into the VK2WI callbacks. While conditions held up Bob was getting into the evening 40 metre callbacks.

It is interesting that the 7146 kHz channel is now mainly clear of shortwave broadcasters and there are many overseas stations – particularly stateside with their many weekend contests. It is good to see the increased activity.

Some members of the VK2WI News Team compiled and presented the VK1WIA news for the 31st May, an interesting operation. Recently stump grinding was carried out at the Dural site to increase parking capacity. Over the years many trees had died and been subsequently cut down for firewood, leaving an array of hazards to both parking and grass mowing.

73, Tim VK2ZTM.

Twin Cities Radio and Electronics Club

Peter VK2CIM

The annual Riverina Field day hosted by the Twin Cities Radio and Electronics Club Inc. is being held at Murray High School on Sunday the 26th July 2009, on the corner of Kaitlers Road and Kemp Street Lavington. The event will be located in the assembly hall.

Opening times for stall holders is 7 am, and for amateurs and the public at 10 am.

Closing time is 1 pm. Tea and Coffee will be free to everyone.

There are a number of reasonable motels located nearby and in Albury and Wodonga for those who wish to spend a weekend here with us. On Saturday evening some of the club members will be having an informal dinner at the Albury Commercial Club Bistro where the prices are reasonable.

Contact Tom VKMY: sanders_01@bigpond.com Phone: 02 6026 2260 Mobile: 0417 546 695

Local repeater 147.000 negative offset or simplex 146.500: club call VK2EWC

Peter Presutti VK2CIM E. vk2cim@wia.org.au Mobile: 0417 441 137

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"Hey, Old Timer..."



If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194

News from

VK3

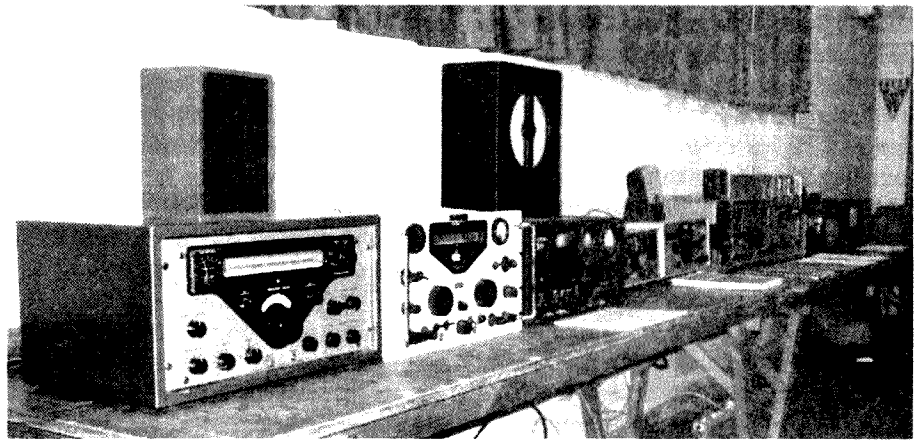
GEELONG AMATEUR RADIO CLUB – The GARC

Tony Collis VK3JGC

All our yesterdays

A fascinating evening was recently spent at the clubhouse reviewing communications receivers of bygone years.

Most of the equipment on display was operational and included an RA17, an AWA CR6A, a Drake 2B, a Collins 51J-4, a Kingsley AR7, an FRGC, a Heathkit, two Hallicrafters receivers the SX101 and the S36, and an Eddystone EC10 and 640. Amongst the owner presenters were Ken VK3NW, Lou VK3ALB, Chas VK3PY, Don VK3IT and Calvin VK3ZPK.



Vintage radios assembled in the GARC lecture room

All the receivers were fully operational apart from the AR-7 and 51J-4, both of which were in need of some restoration. Each receiver was introduced by its owner with a brief description of its history and features. Afterwards those members present were invited to try their hand at operating the receivers of their choice. It was both an enjoyable and nostalgic evening for all.

Normandy 60 years on, the myths and legends

The GARC was treated to a presentation by Robin Mawson, of a paper he presented at the Military Historical Society of Australia Bi Annual conference in 2004.

The presentation focused on the myths surrounding the post D Day landings and the reflective negative attitudes, both political and nationalistic, amongst the Allies that were subsequently to be manifest both in books as well as recent blockbuster movies.

A major element of the presentation dealt with how the Tiger Tank myth arose. This was in part due to German propaganda coupled with US and allied forces' ignorance. The US press labelled any photos of tanks as Tigers regardless if they were Panzer IVs or Panthers etc; as for the US specific fear of Tigers itself, this dated back to 1943's campaign "Torch" at Kasserine Pass where the US suffered a dramatic defeat. Tigers were used, albeit in small number, to defend Tunis, so the legend of their invincibility may have begun then.

The attack at Villers-Bocage in June of 1944 where several Tigers had stopped the advance of the British 7th Armoured Division was what legends are made of and this really cemented the legend of the Tiger tank. It was here that the SS legend Michael Wittman and his crew single-handedly destroyed about twenty-five armoured vehicles (note they were full of munitions and fuel). This caused the British to acquire a sense of insecurity over the ability of their equipment to defeat these German tanks.

Myth it was, as by the end of the Normandy campaign there were fewer than five Tiger tanks in the area.



Robin Mawson Presenting "Normandy 60 years on"

Repeaters and beacons

The beacons and three repeaters, two RGLs (VHF and UHF) and RGC, maintained by the GARC, are all working well.

The Otways repeater at Beech Forrest VK3ROW has been reported for some time as having various problems from lock ups to varying output power.

As there is no person who can take on the repair task in Colac, the job has fallen back on the GARC through the offices of VK3NW and VK3NJP.

Amateur Radio Victoria which holds the licence has been advised that this repeater will be off air for a considerable period whilst it is being refurbished. At this time it is not proposed to add CTCSS to this repeater and it will be returned to the site later in the year.

Future events

All future events at the GARC and a mine of useful information can be found by logging onto www.vk3atl.org

ar

News from

Christopher Comollattie VK4VKR
vk4vkr@wia.org.au qtc@wia.org.au

QTC VK4
First Published July 1927 "Of, By and For the Amateur"
NEWS FROM/FOR QUEENSLAND RADIO AMATEURS

Mid Year

As the year progresses we are only getting closer to Christmas, it is only 178 days away. But let us get over the winter first, warm up a little and send something to qtc@wia.org.au or vk4vkr@wia.org.au as I am running a little short in what is happening with amateur clubs around VK4.

CHARC

The Central Highland Amateur Radio Club Annual General Meeting is taking place at Camp Fairbairn near Emerald from late Friday afternoon 25th to Sunday morning 27th September.

Accommodation is available on site; there is a big BBQ dinner and Monster Auction on Saturday night and a recovery breakfast on Sunday.

For further information contact Secretary Gordon Loveday VK4KAL on 07 49854168 or email gordon.123@aussiebroadband.com.au While you are online also check out the Central Highland Club's Yahoo site at http://au.groups.yahoo.com/group/charc/

VK4FUU

Ashley and Brenda onboard *Ashymakaihken* are still sailing the high seas. It was good to hear them using the local Rockhampton repeater during their stopover.

Last report 11 June 2009 2347UTC
22.26.63S 150.44.04E

Anchored at Pearl Bay, Port Clinton QLD Australia.

TARC

The Townsville Amateur Radio Club Inc has a good social and WICEN calendar for July and August. Are you able to assist them? If so, then contact co-ordinator Eric "Blue" Collins VK4FBLU 47754184.

Sat 18 July: TOWSA Subway Magnetic Island to Townsville Swim - Cleveland Bay

Sun 19 July: TCAC King of the Hill, Hill-Climb Heat Three - Mt Stuart

Sat 8 Sun 9 Aug: TCAC Cardwell Classic Rally - Cardwell State Forest

Sat 22 Sun 23 Aug: TERAHA Endurance Ride 120/40/20/5 - Bluewater Region

Sun 30 Aug: Strand Masters Swim

WICEN Net

WICEN Queensland holds a net every Sunday on 7075 kHz from 8-30 am (2230 UTC). The net calls in regular stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3.600 MHz.

If you would like your club HF net details added here or if the information printed is incorrect/not complete, please let somebody who can change it know about it vk4vkr@wia.org.au

And finally a very large thank you to all the VK amateur radio operators that assisted me in sourcing information required for programming a radio of mine. It goes to show that we are there to support our hobby and other operators. THANK-YOU.

Regional HF Nets

Monday Evening: Mackay Club Net -VK4WIM Net Control - 3597 kHz from 0930 Z

Tuesday Evening: RADAR Net - VK4WIR Net Control - 3613 kHz from 0930 Z

Wednesday Evening: Gold Coast Net -VK4WIG Net Control - 3605 kHz from 0930 Z

Wednesday Evening: Bayside District - VK4BAR 3567 kHz from 0930 Z

Thursday Evening: Henry Fulford Memorial Net - VK4WAT Net Control 3588 kHz from 0930 Z

Thursday Evening: Sunshine Coast Net - VK4WIS Net Control 3660 kHz from 0930 Z

Thursday Evening: Hervey Bay Net - VK4CHB Net Control 3615 kHz from 0730 Z

Friday Evening: Central H/lands Club Net - VK4WCH Net Control 3618 kHz from 1000 Z

Friday Evening: Lockyer Valley Club Net -VK4WIL Net Control 3570 kHz from 0930 Z

Saturday Evening: Darling Downs Net -VK4WID Net Control 3587 kHz from 0930 Z

Sunday Morning: WICEN QLD Net - VK4IQ Net Control 7075 kHz from 2230 Z

Sunday Evening: North QLD Net - VK4WIT Net Control 3605.4 kHz from 0930 Z

Sunday Evening: Dalby and Districts Net 3585 kHz from 1000 Z

Until next time 73

VK4VKR (IRLP 6973)
On the side and listening
ar

2009 Club Grant Scheme

Innovative ideas are sought for

Projects to attract new amateurs

and

Projects supporting emergency communications

Applications close 31 July 2009

The rules and application form can be downloaded from

http://www.wia.org.au/members/affiliation/about/

ALARA

Aysha Venugopal VK5FASH

New chums, old chums and a passing of the baton

Changing times and busy times for ALARA at the moment. New president, new scribe, one of our longest time licensed members meets one of our most recent and all the while time's winged chariot brings the major event, the 2012 YL International Meet, closer to Adelaide.

Hello everyone! ALARA has been quietly active this month with a new board of office bearers in place.

Christine Taylor VK5CTY who usually writes this column and has been doing a wonderful job of it has decided to hand it over to me. Big shoes to fill as Christine is a veteran and I will try my best. She is one of only two honorary life members of ALARA and she has promised to guide me.

I think its kind of opportune that I am also writing about ALARA's other honorary life member in my first column for AR – Mavis Stafford VK3KS who marked an important milestone as a YL in Melbourne in the first week of June.

Mavis Stafford VK3KS

When the parents of Mavis Stafford VK3KS took in the local school teacher as a boarder at the Victorian town of Rupanyup in1939, little did they know that it would be a part of ALARA history.

From Ivor VK3XB who she later married, Mavis picked up Morse code and a passion for amateur radio. She obtained her certificate of proficiency and call sign on 6 June 1939 and soon became active on radio.

Within three months and about 110 contacts, the outbreak of World War II led to temporary suspension of her radio transmitting. In1961, the Melbourne Herald profiled Mavis as one of three housewives who were the only qualified women members of the Victorian Division of the Wireless Institute of Australia.

She was one of the first YL members of the exclusive First Class Operators Club, which requires 25 words a minute Morse – not an easy target to achieve. She was also one of the first members of ALARA, hosting some of its early meetings in her home. Here is a report from Marilyn VK3DMS and Jean VK3VIP from Melbourne who were at a special event to celebrate Mavis's 70 years on radio:

Mavis VK3KS 70th Anniversary

On Saturday June 6th, the exact date that 70 years ago Mavis VK3KS received her licence under that callsign, 40 amateurs and friends celebrated at a special lunch at the Wheelers Hill Hotel in Melbourne. Many of her old friends, Jenny VK5ANW, Gwen VK3DYL, Marilyn VK3DMS, Bron VK3DYF, Robyn VK3WX and Pat VK3OZ among them, joined in greeting her as she arrived. Now she knew there was to be a lunch, but not that it would be such a huge event.

Also present were Michael Owen VK3KI, President of WIA and Robert Broomhead VK3DN.

During the afternoon Michael Owen presented Mavis with a certificate from the WIA to acknowledge her achievement of 70 years, and Marilyn VK3DMS, Immediate Past President of ALARA presented her with an inscribed plaque from the members of ALARA. She also received a lovely bouquet of flowers, and cut a special cake.



Mavis VK3KS and Marilyn VK3DMS share a laugh and reminiscences at the plaque presentation.

Everyone present received a booklet showing Mavis's achievements through her life.

Mavis also met ALARA's new and youngest member Monique VK3FWPZ, along with several other young amateurs. She was so happy to see the younger generation picking up the baton.

(See also the Inside Front Cover and the separate story on page 23.

Photograph: John Fisher VK3DQ

2012 YL International Meet in Adelaide

The plans for the 2012 YL International Meet to be held in Adelaide are slowly taking shape. New ALARA president Tina VK5TMC (see *AR* cover) is the coordinator for the event and is busy planning the events.

Some tentative dates in May 2012 have been proposed and venues for accommodation and the Meet are being scouted. The Meets are always great places for YLs to meet and share their experiences. This time, a trip to Darwin on the Ghan is also being proposed (as follow-on to the Meet in Adelaide).

Considering that the Meet happens around the best tourist times to visit Darwin, it promises to be an unforgettable experience. Travelling by the historic Ghan is an experience by itself. Lots of YLs are already getting excited and have started saving for the Meet.

Great contests for YLs

Contesting is a facet of amateur radio and many of our YL members are avid contesters.

For those who want to notch up a few milestones and decorate their shacks with certificates, contesting is the way to go. Our own YL member Shirley VK5YL has received numerous accolades and certificates recognizing her participation in contests organized by groups in New Zealand and Canada. The Canadian Ladies Amateur Radio Association is proactive in organizing various contests including the unique EchoLink contests.

It is a great reminder to all YLs that there are a lot of contests out there and certificates and trophies waiting to be won.


The Canadian Ladies Amateur Radio Association
C.L.A.R.A. CONTEST
March 10th and March 14th 2009

is pleased to present this Certificate to

Shirley VK5YL

for

Highest number of YL Echolink Contacts - 186 points

Contest Manager


Canadian Ladies Amateur Radio Association

IN CELEBRATION OF CLARA'S 40TH ANNIVERSARY

This certificate recognizes

Shirley Tregellas VK5JSH

For making 40 YL contacts across Canada or beyond

April 19, 2008

Gold Coast members meet

Members of ALARA in Gold Coast met recently at the Gordoni's Restaurant, Paradise Point. There were seven ALARA members among the 22 at the event. They had an enjoyable time. Marisa VK4FMAR, ALARA's new Secretary, won the door prize, a crocheted doily runner donated by Treasurer Margaret VK4AOE.

The next get together for the members in VK4 is ALARA's 34th Birthday Party, held at the GCARSI club rooms at Nerang, on Saturday 18th July at 11 am. It is a good time to catch up with the YLs and their OMs over a sausage sizzle and raffles. Do not forget to bring some finger food. For information, contact Pam VK4PTO, the VK4 State Representative at vk4pto@tpg.com.au

Do not forget that it is ALARA's 34th birthday on 25th of July 2009. Some clubs will be having a birthday luncheon. Look out for news about special birthday greetings sessions on the 80 metre band and do not forget to tune in.



Gold Coast ALARA members (left to right) Pam VK4PTO, Jan VK4FJAN, Catherine VK4VCH, Robyn VK4HRH, Sheralyn VK2LUV, Brenda and Marisa VK4FMAR.

Get ready for contesting in August

The big contest for us YLs is around the corner in August. It is time for the ALARA contest on the weekend of 30th and 31st of August. The other major contest is the Remembrance Day contest on the 16th and 17th of August.

Keen contesters, it is about time to get it all rolling for a long night on the radio, with lots of coffee and making QSOs. It is probably a good time to check that the radios are working, the antennas are tuned, the logging software all working, and to familiarise yourselves with the contest rules.

There are some good logging software packages catering to these contests: the popular ones being the VK Contest Log (VKCL) by Mike Subocz VK3AVV, VK5DJ RD logging program by John Drew or the WinRD+ logging program by James McBride VK6FJA. The rules for the contests and the links to download these programs are available on the WIA website. Good luck to all contesters and hope to catch you on air.

ar

News from

Keith Balnbridge VK6RK

VK6

The Northern Corridor Radio Group

The last social meeting of the NCRG saw a visitor in the form of Bob VK6POP, now a national director. Bob was there to present two different items.

First was the presentation of the Al Shawsmith Award which was awarded to John Sparkes VK6JX for his article "DX Chasers Club - Faure Island DXpedition, 2008" published in November 2008 AR. John is the club's antenna coordinator and a former occupier of this position of mine many years ago. Well done John, it is always good to see a fellow member get recognition nationally.

The second presentation was to yours truly as the initiator of the VK6-ZS 2 metre beacon project and the cheque for $1000 has already been spent on a tower, antennas, and so on! The beacon project is coming on well and the foundations for the tower are to be laid on Sunday 7 June so things are moving along.

I would like to thank Bob for coming along to present both items.

The weekend of 30/31 May saw the club host Bernd VK6AA/VK2IA in his attempt to break the Oceania record for the CQ WPX CW contest. Unfortunately he did not quite make it but he did get over five million points in the Single Op/ Single band 40 metre category, helped along by the clubs 40 metre beam no doubt.

I do not know how people survive 48 hour contests with little sleep and living on bananas!

There have also been several "expressions of interest" from hams around the world intending to visit WA and wanting to do some operating from the club premises, including a very serious contest operation from one of the "Californian Kilowatts" and an Italian amateur wanting to do some serious DXing from somewhere new. All are welcome at Ham Heaven, after all, the members cannot use it all the time, so we will accommodate guest operators whenever possible.

The club was involved in a major project recently which saw those present, with the help of cranes and various other substantial machinery, acquire two more towers for Ham Heaven.

One is 30 metres (100 feet), the other 20 metres (65 feet). The original use of the towers was part of the Ionospheric Prediction Service at Mundaring. Sadly this was vandalized several times and the decision to remove the equipment was made and the club was offered two of the towers provided we removed them all from site.

The third tower was removed on behalf of IPS and will be delivered to their site at Meckering where it will be used to study hydrogen bursts emitted from the Sun on frequencies from 2 – 40 MHz.

All clever stuff and a pleasure to be involved in the process.

WARG

Reported by Heath VK6TWO.

As you may be aware, I have now taken on the President's position at WARG, and we have had a substantial change to the remainder of the committee.

There are going to be some very positive changes at WARG, which have already begun. Danny VK6ZUK and myself were the key drivers for the D-STAR project and we had a very strong following.

I am also a member of NCRG, committee member of VHF Group and tech officer in WICEN, so I am hoping to be a bit of an advocate for all of the clubs. I am hoping to be a key passage of information between all the Perth clubs to try and get some cohesion and joint activities.

Danny and I are also trying to increase WICEN support and activity within WA by utilising as much information as we can from other states and getting into the ears of some of the local authorities. We see the role of WICEN as being crucial in the event of any disasters and emergency communications.

Great news Heath, I reckon you could be a candidate to replace me on the VK6 Advisory Committee after my resignation two months ago? Good luck with the new position.

Hills Group

Reported by Mick VK6IN.

The members have been very busy with a station refurbishment. Stage one is a mast and antenna upgrade for HF, a four element beam is now in the air and has had very good results, probably has a lot to do with our height ASL, of almost 300 metres! Listen out for VK6AHR Saturday afternoons and give us a call.

We would also like to receive reception and usage reports for the Morse Tutor beacon on 3.686 MHz LSB, generally on-air for two hours each morning and evening, 2330 to 0130 and 1130 to 1330 UTC everyday. Transmission is approximately 35 watts into a G5RV antenna.

Stay tuned for further developments.

Thanks for the update Mick and congrats on the new callsign.

On the subject of new callsigns, there have been many changes recently with the freeing up of two letter calls. Personally my initials are still in the hands of VK6KB so I cannot have my first choice! However I noticed VK6RK was available. Those are my Christian names and were also part of my first call when I emigrated in 1987 (VK6BRK), so I applied and I am now officially VK6RK.

I love it, so much easier in pileups on SSB and a nice ring to it on CW. I still hold VK6XH and will do for the next four and a half years, until it expires. So you can email me now on either call, vk6rk@wia.org.au or vk6xh@wia.org.au

Finally to the event of the year!

The NCRG Hamfest 2009 will once again be held at the Cyril Jackson Recreational Centre, Fisher St., Ashfield on Sunday 2 August. Several traders have expressed their intention to be here this year including Bushcomm, Andrews Communications, Vertex and

City Online to name a few. The booking form is online at www.ncrg.org.au

Please note there are no charges for tables at all, however, everyone passing through the door, including NCRG members, pay the $5 admission. There will be the usual excellent food and hopefully this year's attraction will be the "Morsecodeans", more news to follow.

It is the only major event held in WA annually and we hope you will support it with your attendance; after all it is the only chance to catch up with old friends that you never speak to anymore!

The attendance has been fairly steady at around the 400 mark for some years now, making it one of the biggest Amateur radio events in the whole country. Hopefully, as the invites go out, more traders will confirm their attendance and we in WA can experience what it is like to attend a mini mini Dayton!!

There will be the usual recycled junk, sorry pre-loved equipment from the various groups and individuals and there are always bargains and things you just might need for that project you have in mind. Personally I still have something I picked up at a Hamfest about 14 years ago which is waiting to be put into use.

Well I have dribbled on long enough so I wish you all the best of DX: the sun is showing some life as I write this, so perhaps by the time you read it a month later, DX will be around.

73 from Keith VK6RK. **ar**

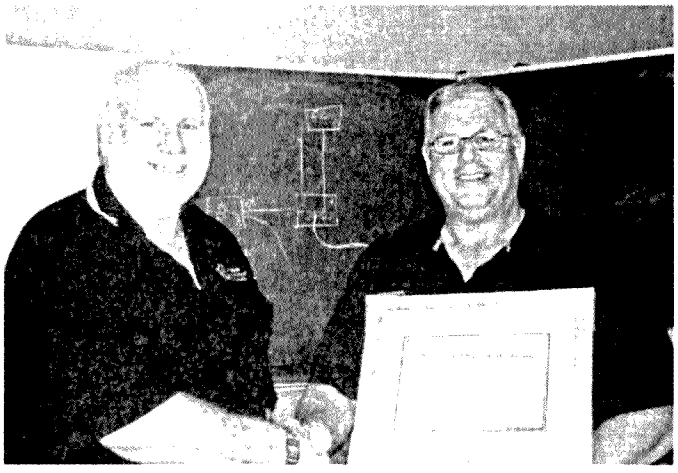


Photo 1: WIA Director Bob VK6POP presents the Al Shawsmith Award to John Sparkes VK6JX for his article 'DX Chasers Club – Faure Island Dxpedition, 2008', published in the November, 2008 edition of Amateur Radio magazine.

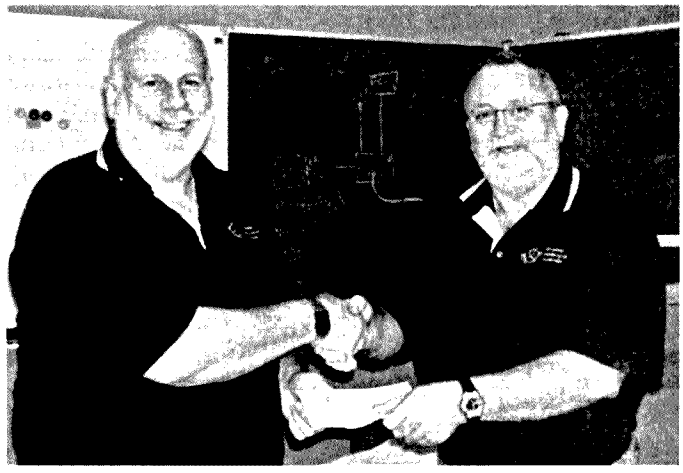


Photo 2: WIA Director Bob VK6POP presents a cheque for $1000 to the NCRG, represented by Keith VK6RK, for their project developing the VK6-ZS two metre beacon project.

News from VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY and John Elliot VK5EMI

The May meeting was an unusual one. The talk was given by two young lads, sons of Graham VK5ZFZ. They have lived with computers all their lives (among a number of other interests they share with their father) so are much more familiar with what the computers can and cannot do.

They gave everyone an insight into how to retrieve lost files, how to manage your files more efficiently and generally how to make your computer do what you want.

Of course to make it do what you want you have to be sure you know how to tell it to do just that.

As most of us are aware when our computers do not do what we want it is because we have not told it correctly. I have had a sign on my computer:

"Why does my computer do what I tell it to do instead of doing what I want it to do?"

Well after the talk given to AHARS I may be able to throw that sign away!! I hope!

Do not forget that the AHARS Buy and Sell will be in September this year (we could not get the hall in November), so be ready for Sunday September 13. Start clearing out your shack and gathering your money now.

To book a table please contact David VK5KC phone 8278 8108 or email davidclegg@internode.on.net

There will be meetings on the usual third Thursday of June and July at the Belair Community Centre as well as the mid-year Dinner on 12th July.

There will also be a visit to the ETSA Museum on July 5th, of which you will hear more at the next meeting.

The May meeting was concluded with a most successful auction of items from one of our current deceased estates.

Next meeting we will be putting more items on the front table for members to place their bids. In the meantime, on-line members will receive updates on major items available for tender.

Silent Keys: Over the past three months, we have said goodbye to three members: John Hall VK5GMH, Bryan Trott VK5SV, and Jeff Daly VK2MFR (formerly VK5MFR).

These fine people have contributed much to AHARS and amateur radio in general. Please check our website newsletter for more details.

ar

News from

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

VK7

The 2008-09 WIA National Broadcast year saw VK7 with a healthy total of 5537 call-backs putting us just behind VK5 with 5760 and ahead of VK3 with 4400 call-backs.

This averages about 109 call-backs each week for 51 weeks of broadcasts. Not bad for a state that only has approximately 600 licensed amateurs and these call-backs do not include our 40 m and 20 m broadcast call-backs as these frequencies only rebroadcast the VK7 Regional News.

Northern Tasmania Amateur Radio Club

NTARC's May presentation was from Ian Hart VK7KIH from the Royal Flying Doctor Service based at Launceston Airport.

The evening even included showing off an original Alf Traeger radio which I understand Winston VK7EM has offered to restore back to working order. There were even pretend casualties with Kerry VK7FKEK and Duncan VK7FLAK helping with the presentation. A great night, thanks Ian.

North West Tasmanian Amateur Radio Interest Group

The new NWTARIG website can be found at: http://www.my-x15.net/nwtarig/

Much work has been undertaken on the VK7RMD Mt Duncan repeater and thanks go to many people, especially Joe VK7JG and Winston VK7EM.

The link between Rocky Cape VK7RAC 70 cm and the Mt Barrow VK7RAA 2 m repeaters has been licensed following a 12 month trial period. The permanent link provides a gateway for NW amateurs into the North.

The Radio Experimenters and Social Group has been meeting regularly on Saturday mornings at cafes along the North West coast. These are great social occasions with much discussion and socialising.

Recently members of the EMDRC were in attendance, Baden VK7BRY was a visitor from the South and Ron VK7HRM showed off his new APRS tracking system which can be worn on a belt.

North West Tasmanian Amateur Television Group

Congratulations to James (Hamish) Curran VK7FHCL who passed his Foundation licence assessment in May. Welcome to the bands Hamish.

The NWTATVG has been experimenting with video streaming and flash video downloading with good results thanks to Danny VK7HDM, Tony VK7AX, Ivan VK7XL and Rob VK7OM.

Testing of the Club's ATV Repeater is continuing with the propagation tests and links proving a challenge for members.

Radio and Electronics Association of Southern Tasmania

REAST's May presentation was a repeat of the GippsTech – Special Edition talk on *Over the Horizon Optical Communications* that was given by Rex VK7MO and Justin VK7TW. The presentation was videoed and has featured at a recent ATV night. Our condolences and thoughts are also with Bill VK7AAW whose XYL Rosemary passed away recently.

ATV nights are continuing to prove successful with many coming along and getting involved with experimenting and ATV.

Some of the topics covered include: Digital L/C meters, historic film of PM John Gorton at Honey Suckle Creek during the moon landing, converted 16 mm film from Peter VK7PD and Bevan VK7CX on a 1965 VK7 Hamfest in Campbelltown, a day in the life of a Medical Physicist with Mike VK7MJ, Phil Harman VK6APH's talk on the HPSDR project from the 2008 ARRL/TAPR Digital Communications Conference, Xenon discharge lamps and blue-ray player electro-optics, just to name a few.

We are currently going out on 444.25 MHz analogue ATV and 1283 MHz Digital ADB-S ATV (thanks to Jack VK2TRF). Come along and see what it is all about – Wednesday nights from 7:30 pm except the first Wednesday of the month. **ar**

Over to You

Point Cook Signals School Courses S1 and S2

I am J W Shield VK6SX and I am looking for old RAAF compatriots from January, 1940.

I was stationed at Point Cook Signals School near Laverton in Victoria where I met other radio amateurs who had been drafted into the Signals Corp.

We were on courses S1 and S2 together and I am wondering if any of you are still around!

As I am now 90 years old there may not be many others, but if you were there, or perhaps you know someone who was on the same courses as me, I would really appreciate hearing from you.

Please contact me direct VK6SX QTHR or via Keith VK6RK on email vk6rk@wia.org.au

73 J W Shield VK6SX.

A 1296 MHz saga

Michael Coleman VK3KH and Ian Cowan VK1BG

Two years, seven months and 90 seconds

This is the story of the development of Aircraft Enhancement activity on the 23 cm band by Mike VK3AAK/ VK3KH, and Ian VK1BG.

We first met on the daily AE net on 144.2 MHz on 29 June 2006. This was via a fairly easy contact between two reasonably well equipped and located stations. Mike lives at Mt Eliza, a bay side suburb of Melbourne, whilst Ian lives in the western suburbs of Canberra.

The path between us is pretty good, and is well served by high flying jets on the Melbourne to Sydney route. From that time on we had fairly regular contacts on two metres on the AE net, which generally runs between about 8 am and 9 am local time.

..we now complete on 23 cm at almost every attempt, and signal strengths are sometimes at conversational levels.

About four months later, on October 15, we cracked it for a QSO on 432 MHz., and this too was the start of a string of QSOs on that band, though contacts here were not as frequent as on two metres.

We met for an eyeball QSO in Canberra during January of 2007, and the idea that we might be able to get through on 23 cm was floated. Tests then began on an irregular but frequent basis. At this stage the two stations were running 15 watt transmitters, and single Yagi antennas.

First attempts were disappointing, and for some months nothing much was heard by either station. On June 30, 2007 we heard carriers, and shortly later weak CW was identified.

GippsTech 2007 saw another face to face meeting between us, and it was agreed that persistence would probably be rewarded.

Alan Devlin VK3XPD also helped, as at that GippsTech he had some 60 watt linear amplifier modules for sale, and we each acquired one. In due course, each of us had installed one of these amplifiers.

The near miss rate increased quite a bit after that – we were now able to hear carriers quite easily, and that helped us solve three of our problems. These were beam heading, timing, and frequency calibrations of our respective transceivers. When signals are very weak, as ours were at the outset, these three parameters all have to be spot on.

Using SSB, there were numerous occasions on which we were almost able to claim a QSO, but there was always something missing, usually the final 'QSL' exchange needed to formalize the contact.

Then on 6 August 2007 we completed a two way contact, and we both felt quite elated, and relieved, that the months of effort had finally paid off.

Ian went off on leave the next day, so the next successful QSO was not completed until August 23, but after that QSOs came easily and frequently. Mike made further improvements to his station as time went by through an increase of transmitter power to 120 watts, construction of a larger antenna array, and the installation of a masthead preamp.

All this means that we now complete on 23 cm at almost every attempt, and signal strengths are sometimes at conversational levels. On December 31, 2008, the 50th 23 cm contact between our two stations was completed.

There are a few lessons from all this that are worth repeating.

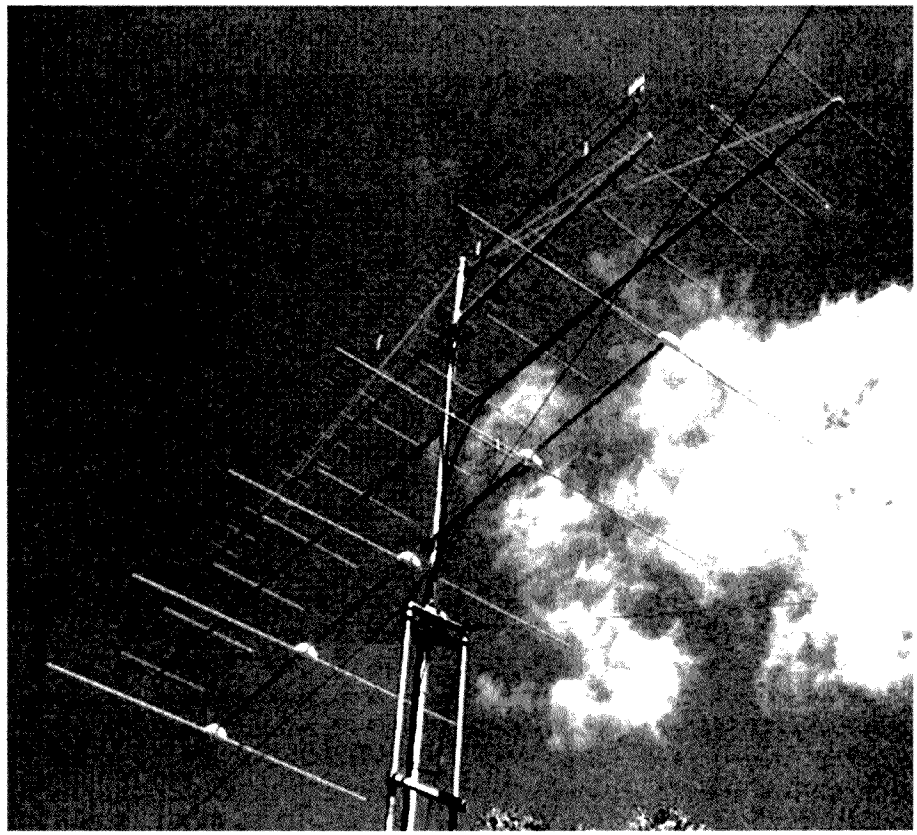


Photo 1: The VK1BG antennas.

First, there is the need for persistence. We endured many fruitless attempts over seven months before logging contact number one.

Second, beam heading is critical at these frequencies. Antenna arrays are very sharp, and the optimal heading has to be (to some extent) established by trial and error, because the reflecting medium is a moving target

Third, as microwavers all well know, frequency calibration of the equipment at each end must be established. We did it by trial and error, which is not the best way!

Finally, timing! We were attempting to use Aircraft Enhancement, and the research papers suggested enhancement times on 23 cm will be much shorter than lower frequencies. Catching these small windows was the key.



Photo 2: The VK3KH antennas.

Our contacts have indeed shown that 23 cm AE openings are typically from 10 - 20 seconds, compared to 60 - 120 seconds typically for two metres. Longer openings have occurred for us (the 50th contact was a 90 second conversation), though these are much rarer.

This has been a long journey, over two years in reaching this milestone. As for so many other journeys, the joy has been in the travelling of the path and the highs and lows along the way.

ar



Contests

Craig Edwards
vk5hrt@yahoo.com.au

Contest Calendar for July 2009 — August 2009

July	**1**	**RAC Canada Day Contest**	**CW/SSB**
	4/5 Jul	DL DX RTTY Contest	RTTY & PSK
	11/12	IARU HF Championship	CW
	11 (TBC)	**Jack Files Memorial Contest**	**CW/SSB**
	18/19	CQ WW VHF Contest	All modes
	18/19	DMC RTTY Contest	RTTY
	19	**VK/trans-Tasman 160 Metres CW Contest**	**CW**
	25	Waitakere (NZART) Sprint	SSB
	25/26	RSGB IOTA Contest	CW/SSB
August	**2**	**TARA Grid Dip**	**PSK/RTTY**
	2	Waitakere (NZART) Sprint	CW
	1/2	10-10 International QSO Party	SSB
		North American QSO Party	CW
	9/10	Worked All Europe	CW
	15/16	**Remembrance Day Contest**	**CW/SSB/FM**
	15/16	Keymen's Club of Japan Contest	CW
	15/16	North American QSO Party	SSB
	29/30	**ALARA Contest**	**CW/SSB**

Final words from outgoing editor – Phil VK4BAA....

Welcome to this month's Contesting column. As the late great Mae West once said: "Too much of a good thing is wonderful". However, this might be countered by the well-known saying: "All good things must come to an end."

I fit firmly in the latter category - my time with the AR Contesting column has come to the end of its natural course and for me at least, this 'good AR thing', must end.

Due to a recent unwanted change in personal circumstances, I have taken the necessary and somewhat unpalatable decision to call it a day and concentrate on pastures new. I have enjoyed being your humble scribe for the last couple of years and have been delighted to see first hand the rise in interest that continues unabated for VK contesting as a whole.

Do not get me wrong – I am under no illusion that this rise in interest is attributable to my short time scribbling in AR. During my term of 'office', the number of VK callsigns appearing in the international contest scene has indeed increased - but it is VK contesters that made it that way and not any cajoling by a lowly columnist such as I. In my opinion, VK has some great operators and they should not shy away from stepping into the international limelight. Nor should the evident but unfortunate 'tall poppy' syndrome be a deterrent to getting on the air and participating. I will still be contesting and hope to pen the occasional contesting related 'piece' for AR from time to time - unless I am persona non grata that is! (Ed: No chance Phil!!)

At very short notice, AR is fortunate that my boots are to be filled by Craig Edwards VK5HRT. In a fleeting moment of madness, Craig raised his hand and volunteered to take up the AR reins and wax lyrical on a monthly basis from the Contesting pulpit.

I wish Craig all the very best in his endeavours and wish to take this final opportunity to wish you all the very best of contesting luck - as long as my score is higher than yours! May you multiply often and produce a huge log. See you on the bands! 73, de Phil Smeaton VK4BAA.

And an introductory few words..

Hi everyone. Firstly I can only echo the positive sentiments and good wishes I have seen sent to Phil for his wonderful work in the contesting column for AR.

I can speak from experience that as I progressed from SWL to amateur radio operator, it was Phil's scribing about the contest scene from a VK point of view that sparked my interest in this side of the hobby. It was this section that I always flicked open first. So thanks again Phil and we all hope to receive some contributions about what VK4BAA has gotten up to during a contest as a single operator or multi effort.

Let me quickly introduce myself. I have spent 20 years of listening on the MW, 90 m, 60 m and 49 m bands for rare and exotic broadcast station DX.

In 2006 I started listening to the amateur bands and had fun over the next couple of years as an SWL. In 2008 I obtained my Foundation licence and then over the New Year I upgraded to my standard call VK5HRT. My main interest is contesting and I have decided

to commit myself to as many events in 2009 as I can.

It started with the John Moyle Field Day, then CQWW WPX SSB, Trans Tasman 80 m, CQ-M and now the new VK Shires. My XYL already thinks that I am particularly odd with this 'radio thing' that I do.

So my suggestion to her at the start of the year that I require around 15 weekends in 2009 to lock myself away from regular society and compete in radio sport and use a handful of annual leave days on a Monday to recover from the 'big 48 hour international events' sent her weirdness meter off the charts.

As Black Adder proclaimed, "I have a cunning plan." I reasoned that by editing this column, it gave me a legitimate excuse to shut off from the real world for 12-48 hours every 4-6 weeks to write for AR from an active contester point of view. Needless to say she saw straight through that plan before I finished the sentence.

But I had already told Phil VK4BAA and Peter VK3KAI that I would do the column, so here I am.

I am only new to contesting, so I really want to make this column interactive and hear from as many people as possible. I strongly invite you to write in and send in your upcoming contest plans, stories about funny, annoying and strange contest experiences or anything related to this wonderful radio sport.

It does not matter if you are a casual operator who gives people a few numbers on a Sunday afternoon or if you have been preparing for weeks and intend to run two days on no sleep, your contribution is greatly appreciated. It can be a sentence, paragraph or a full blown short story, I would love to receive it, remember photos are great too.

John Moyle Memorial National Field Day 2009 Results

The full results and run down of this year's event are already available and hot off the press – well done to Denis Johnstone VK4AE/VK3ZUX for getting these out so fast! (Ed: Brief results were published last month, but I will allow Craig some latitude!) I thoroughly enjoyed myself during this event and there was lots of action on 20 m and 40 m, and 80 m was not too bad.

I found in VK5 that 10 m and 15 m were dead and only made three QSOs to VK4 on those bands. I have given the top three scores from each section and the full results and description is at www.wia.org.au/members/contests/johnmoyle/

The President's Cup honours went to the great efforts by the team of VK3ER at the Eastern and Mountain District Radio Club.

The total number of logs received was 123 which was up from last year's 104. The contest organisers attribute this to the increased number of home category stations submitting logs which as they state is not in the spirit of the contest to promote portable operation.

I was one of those home stations as my non-mains power source went AWOL at the last minute and was unavailable. However I did drive two hours and set up portable antennas for the event. It looks like I will be moving to the Northern Territory by the time you receive this magazine, so it will be great operating portable in VK8 for JMFD 2010.

Many competitors suffered the wrath of stormy weather which limited and/or prematurely ended many operations. All portable stations that were not in the top three in their category still received a participation certificate to reward their efforts. Twelve Foundation licence operators entered and all received certificates to encourage them to get the contesting bug. Again there was a solitary SWL entrant, this time from New Zealand. I was the lone SWL entry last year and then obtained my licence a few months later!

24 hours Portable – Multiple Operator – All band All mode

VK3ER	4573 points
VK2SRC	3291 points
VK2MA	1982 points

24 hours Portable – Multiple Operator – All band phone

VK3CNE	2364 points
VK4WIS	2256 points
VK2HZ	1771 points

24 hours Portable – Multiple Operator – VHF phone

VK3FRC	3004 points
VK3UHF	2587 points
VK3JTM	2469 points

24 hours Portable – Multiple Operator – HF All mode

VK2AWA	3774 points
VK4IZ	2758 points
VK2BTW	402 points

24 hours Portable – Multiple Operator – HF phone

VK2AWX	1162 points
VK2AOJ	1096 points
VK1LW	1000 points

24 hours Portable – Single Operator – All band phone

VK4OE	2057 points
VK2DLR	206 points

24 hours Portable – Single Operator – VHF phone

VK3DAG	1510 points
VK1DA	1201 points

24 hours Portable – Single Operator – HF phone

VK4HAM	854 points
VK5MFW	836 points
VK6ZN	394 points

24 hours Portable – Single Operator – HF digital

VK1WJ	30 points

6 hours Portable – Multiple Operator – All band phone

VK3AWS	1119 points

6 hours Portable – Multiple Operator – HF phone

VK5LZ	238 points
VK7WCN	120 points
VK4WIM	118 points

6 hours Portable – Single Operator – All band phone

VK4ADC	581 points
VK5AGZ	550 points
VK2FDMB	168 points

6 hours Portable – Single Operator – VHF phone

VK5ZT	252 points
VK2FKAM	210 points
VK1PE	14 points

6 hours Portable – Single Operator – HF phone

VK3HJA	290 points
VK4EV	202 points
VK2IO	154 points

24 hours Home Station

VK4VDX	633 points
VK5HRT	582 points
VK2HBG	544 points

6 hours Home Station

VK2KDP	255 points
VK2DAG	196 points
VK3XXS	158 points

Shortwave Listener

ZL2AYZ 230 points

BERU 2009 results

The results of the 2009 BERU are in and Team Australia ended up in second spot with our neighbours across the pond in New Zealand taking fourth. The 'Rest of the World' team took the gold. Team Australia was made up of VK6LW, VK2BJ, VK2NU, VK6HD, VK6BN, VK2KM, VK6VZ, VK7GN, VK4BUI, and VK4XA. Well done guys. The Commonwealth Medal was won by Russ Coleston VK4XA who is now aged 96. This is how the VK individuals fared (* 12 hour entry):

Open Section

15th VK6LW	5990 points
26th VK2BJ	5275 points
43rd VK2NU	4225 points
47th VK6HD	4120 points
50th VK6BN	4080 points
51st VK2KM	4040 points
52nd VK6VZ	4020 points
56th VK7GN	3810 points
57th VK4BUI	3720 points
74th VK4XA	2595 points
87th VK6AJ	2135 points
111th VK8AV	1480 points
112th VK5SW*	1460 points

Restricted Section

17th VK9AA*	2090 points
29th VK6HG*	1705 points
32nd VK5MAV	1645 points
44th VK2EL*	1105 points
61st VK6RZ*	730 points
71st VK4TGL*	500 points

HQ Stations

6th VK4WIA	2550 points

JIDX 2008 Phone results

Fourteen VK operators actively participated in the 2008 JIDX phone contest. VK4NEF won top honours in the SOSB 28 MHz low power category, VK7ZE came 2nd in the SOAB high power category and VK4HAM took 5th place in the SOSB 14 MHz low power category.

Certificates were also received for the category winners for Australia, namely VK7ZE (SOAB high), VK4XES (SOAB low), VK4NEF (SOSB 28 low), VK4FJ (SOSB 21 low) and VK4HAM (SOSB 14 low). Congratulations guys. VK scores were:

VK7ZE*	SOAB	90316 points
VK4HG	SOAB	3500 points
VK3AVV	SOAB	1064 points
VK4XES*	SOABL	4585 points
VK3MDX	SOABL	1457 points
VK2HAQ	SOABL	1305 points
VK6FDX	SOABL	1288 points
VK4VCC	SOABL	315 points
VK3ZPF	SOABL	16 points
VK3ZGP	SOABL	9 points
VK4NEF*	SOSB 28L	9724 points
VK4FJ*	SOSB 21L	3640 points
VK4HAM*	SOSB 14L	3430 points
VK4VDX	SOSB 14L	345 points

2009 CQWW WPX SSB and Russian DX Contest claimed scores

Thanks to Martin Luther VK7GK for sending in some of the latest info to me. The claimed scores for the CQWW WPX SSB 2009 contest are available so check them out at www.cqwpx.com/claimed_2009_wpx_ssb_scores.htm The claimed scores for the 2009 Russian DX Contest are also on line now at www.rdxc.org/results/2009/results.asp

Trans Tasman

The 80 m SSB and 160 m SSB Trans Tasman events have been and gone. I competed in the 80 m event and the band was alive and kicking with activity. Despite high noise levels experienced by most participants, there was never a dull moment.

I am very thankful for the rule whereby you take your best five one hour blocks and delete the worst hour of scoring. During my second hour I noticed that all of a sudden I was getting nowhere on my run frequency and then someone jumped on my spot and took over. OK, that was annoying, but not unheard of. So I started searching and pouncing for some bonus prefixes with no luck.

Then when I could not even work strong stations I knew something was up. My SWR was way out of whack and I was not transmitting much power at all. A quick look in the dark at my vertical with 60 radials revealed that a large old dog was wondering around and using my ground mounted vertical as a bum scratching post.

So some running repairs to the feed line attachment had me up and running again. So fortunately I could dispose of my horrible 2nd hour score!!

Jack Files

This contest is run in honour of the late Jack Files, a long-serving VK4 WIA councillor. Full contest rules and information is available at www.wia.org.au/members/contests/jackfiles/ Briefly:

Object: To work as many other amateur stations, and particularly as many different VK4 Council areas and as many different states and territories as possible within each one hour block of the contest.

Date: Saturday, 11th of July 2009

Time: 0800 - 1400 UTC in six one-hour blocks for the purpose of duplicate contacts.

Band: 80 metres only. Use 3500 - 3700 kHz to put all licence grades on an equal footing.

Modes: Either CW, SSB or All Modes (To qualify for all mode a minimum of 5 contacts must be completed for each mode)

Categories: Single Operator; Club Station (each category can be a mobile or portable station)

Exchange: Non-VK4 stations will send RS(T) plus serial number starting at 001 and incrementing by one for each contact. VK4 stations will send RS(T), serial number and two-letter shire or town code for purposes of multipliers.

Score: One point per contact

Multipliers: Each VK4 Council area counts as a multiplier only once over the entire duration of the contest. All participants may also count the first contact in each state or territory as a multiplier and these may be counted within each hour block during the contest.

Final Score is total QSO points multiplied by the total number of multipliers.

Repeat Contacts: In order to make best use of the band, stations may be contacted once in each hour on each mode. Repeat contacts with stations may be counted within the same one hour block only if the station is mobile and crosses from different shires, towns, states or territories to another. All repeat contacts must not be consecutive.

Logs must show full details of all QSOs and must be accompanied by a Summary Sheet showing operator's name; address; callsign; category and mode entered; claimed score and a declaration that the rules and spirit of the contest were observed.

Send logs by mail to Jack Files Contest

Manager, 26 Kerr St. Park Avenue, Nth Rockhampton QLD 4701. Logs may be sent by e-mail in text format to: vk4ajs@wia.org.au

Closing date for all entries is 28th of August, 2009

Certificates will be awarded to the top scorers in each mode in each VK State, ZL, P29 and any DX country (i.e. country outside VK, ZL or P29). As well there will be a certificate awarded to the overall highest scorer who will be declared overall contest winner. The only stipulation is that the overall winning operator must be a VK amateur.

2009 IARU HF World Championships

OK boys and girls, this is one of the big contests of the year so strap yourselves in for 24 hours of CW and SSB excitement on 10, 15, 20, 40 and 80 metres from 1200 UTC Saturday July 11 until 1200 UTC Sunday July 12. I will not include the rules here, I recommend you go to www.arrl.org/contests/rules/2009/iaru.html

Do not forget that the best of the best from around the world, including a team from VK/ZL, will be competing in the World Radiosport Team Championship in Russia during the contest. It is very much like a mini-Olympics within a contest. The full details are at www.wrtc2010.ru

The teams should be more even than any past WRTC as they will be very much physically closer together, unlike past WRTC when some teams were inland teams and others on the water. It is a field day arrangement as competitors operate in a tent from a generator power supply. Each two person team will have a 10/15/20 tribander and inverted Vs for 40 and 80 and a maximum of 100 watts.

The rest of us can have a wonderful time competing in the IARU HF World Championship. As I write this column in late May, it appears conditions are getting better on HF. Could it be that Solar Cycle 24 has finally stopped snoozing so that we can again enjoy DXing? It all looks good for a great contest this weekend.

It is a tricky situation as I will be holidaying in Townsville to attend the V8 Supercar race in the streets FNQ. But again, a cunning plan. I will be packing the Icom IC-706MKIIG, ATU, balun, coax, dipole wire, 2 helical whips and a magnetic whip mount. So hopefully in between family commitments I can operate on 40 m and 20 m at 1200 to around 1400 on Saturday night, 1900-2200 Sunday morning and then 0700-1200 Sunday night.

I will not be setting the world alight with my score, but hopefully I can boost the 20 m and 40 m QSL tallies. Before the event I will watch my copy of WRTC 2002 Finland event to really get into that IARU HF World Championship spirit!....I do not know why my XYL says I am a weirdo.

And here are some more details from the WIA Secretary:

IARU HF World Championship Contest

Geoff Atkinson VK3AFA
IARU-R3 Liaison Officer

The 2009 IARU HF World Championship Contest takes place the second full weekend of July, beginning 1200 UTC Saturday and ending 1200 UTC Sunday (11-12 July 2009).

Both Single and Multi operator stations may operate the entire 24-hour period.

All licensed amateurs worldwide are eligible to participate in this contest. The objective of this contest is to contact as many other amateurs, especially IARU member society HQ stations, around the world as possible using the 160, 80, 40, 20, 15 and 10 meter bands. Multipliers are the total number of ITU zones plus IARU member society HQ stations worked on each band (not mode).

Last year, there were 10 societies participating in the contest from Region 3, and it is hoped to hear more HQ stations from our region this year.

IARU officials represent a maximum of four multipliers per band (AC, R1, R2 and R3). Our two regional AC members have the option of using "AC" or our regional designator "R3".

Regional EC members who are not AC members must use our designator "R3".

VK7WI will be on air as an HQ station operating in Zone 59.

Jay S. Oka JA1TRC, Secretary, IARU Region 3 is planning to participate in this contest and hopes to contact as many as possible during the contest.

You can find the complete rules at: http://www.arrl.org/contests/rules/2009/iaru.html

Remembrance Day

Just a reminder: the Remembrance Day contest will be on from 0800 UTC Saturday 15th August until 0759 UTC Sunday 16th August. This contest commemorates those amateurs who died during World War II and encourages friendly participation between VK, ZL and P29 operators. Full rules in next month's edition.

With this contest, you have the opportunity to operate on ALL bands (except WARC), so it is for the aficionados of various metre bands. I will be entering as a single operator on HF, with fingers crossed, from somewhere in VK8 land.

Oceania – less than 3 months away

By the time you read this, the two Oceania contest weekends will be only 3 months away.....no I am serious!!! The SSB weekend is October 3-4 and the CW weekend is October 10-11. I am just looking in my little contest diary, before I do Oceania SSB, there is IARU, IOTA, Remembrance Day, RDA, All Asia SSB, WAE SSB and SAC! Oh boy, the big contest season is definitely on its way.

You must check out this website: *radio-sport.net*

Have you visited the radio sport website? It is the brainchild of Jamie NS3T and is modelled on a newspaper "sports" page, except it is all about the contesting hobby. You can subscribe to the site and receive an email update every time a new article comes out. Jamie has been supportive of the VK Shires contest and has published our activity. So please visit this great site at www.radio-sport.net

Here's my last over before going QRT for this month...

I hope everyone had a great time during the recent Winter VHF-UHF Field Day and the inaugural VK Shires contest. As this column goes to AR on the 1st of each month, I write this just prior to the VK Shires event. I am particularly excited about this event and hope to write a glowing article with 24 hours full of VK and DX logs.

I will be operating from CO5 in the beautiful Coorong from a couple of tents by the water with a portable 2 element full sized Yagi for 20 m and ground mounted vertical for 10/15/20/40/80 with 60 radials.

Fingers crossed everything works..... I am sure Murphy will pop his head up for a bit of fun. If you want to send in a contribution, please do it by the last week of the month because on the first it flies through cyberspace to AR HQ.

73 Craig VK5HRT vk5hrt@yahoo.com.au **ar**

The tale of a valve

Christine Taylor VK5CTY

How a rare, and now very collectable, part of the WW II winning Chain Home Radar system came to light.

Peter VK3RV was at the AHARS (Adelaide Hills Amateur Radio Society) Buy and Sell when he heard two men discussing their WW2 experience at a radar station in Western Australia.

He asked, "Do either of you remember a VT98 valve at your radar station?"

"I remember it very well," replied Phil VK5NN, echoed by Ron VK5RV a moment later. They could describe the valve well enough.

"Just a minute," said Peter. And he went out to his car and brought back the very valve they had been talking about.

In 1956 Peter was helping his Dad to sort scrap metal (collected by his grandfather, an inveterate 'job lot' buyer at auctions) part of which was a complete radar transmitter. Peter extracted what he might be able to use to further his interest in radio, including two VT98 valves.

Recently Peter researched the valve and found that it had been used in Britain's Chain Home Low coastal air defence radar network (or Chain Overseas Low [COL] flying radars). These were a line of multiple masted aerials on the east coast of England, built in the thirties. The Germans had no idea of the purpose of these aerials until they discovered that Britain seemed to find their attacking aircraft even before they were visible.

Phil and Ron could tell him more specifically that the valve Peter was showing them had definitely been used in the COL Mark 5 radar transmitter

They had both been involved with these valves in radar units during the war. Peter was delighted as he had never met anyone who had used the devices in real life.

The characteristics of the valve (a pulse transmitting triode) are:
Length 330 mm (about 13 inches)
Diameter 90 mm (about 3.5 inches)
Filament current 12.6 volts at 58 amps
Grid current 30 amps
Single tube 150 kW pulsed at 200 MHz
Pulse width 2.5 to 4.5 μ per sec, PRF 400 pps
Range at height of 152 metres (500 foot) —180 km (110 miles)
Aerial used 5 bays of 4 stacked dipoles
Polarisation horizontal
The valves were used in a push-pull circuit.

In the transmitter shown note that the valve is upside down compared with the way Phil and Ron are holding it — that is the orientation in which it was used.

Later a number of these valves, as parts of 'to be built' radar stations were sent to Singapore. They arrived just too late so the ship carrying them was diverted to Western Australia where four radar stations were built – Geraldton, Rottenest Island, Cape Naturaliste, and Albany. Subsequently in December 1941, Australia ordered 32 transmitters, which were used all around the coastline.

Phil was made CO of one of those first radar units – at the age of 20, straight out of radar school!

Ron was the technician on the radar stations at Cape Jervis in SA, and later in New Guinea.

Phil tells us that the CSIRO, NSW Railways and the Gramophone Company developed the smaller units using smaller valves, which were nicknamed 'micro pups'. And it was at Milne Bay in New Guinea, where one of these Australian developed transmitters was installed, that Phil and Ron met each other.

Phil also says that although the VT98 was not originally intended for use at VHF some clever circuitry made it effective at these frequencies. During the war years the range of these radars improved from 320 km (200 miles) to 2720 km (1700 miles) and could detect ships as well as planes. (The navy did not believe them until given proof!!)

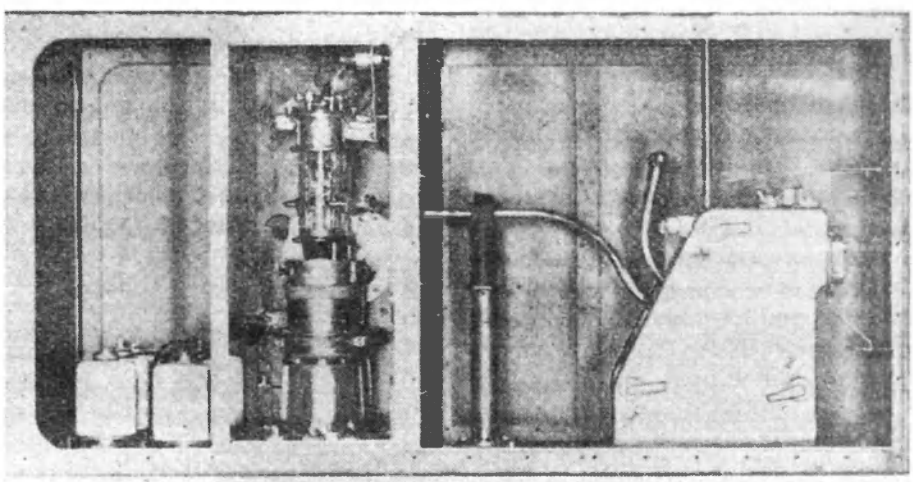
More information on the VT98 is available in various IEEE journals.

A VT98 was offered for sale on eBay in 2000 for $15,000. **ar**

Ed Note: There are excellent photos of the valve at http://www.radarpages.co.uk/mob/chl/chl3.htm



Phil VK5NN and Ron VK5RV, with the VT98 valve.



• Fig. 5.—C.H.L./G.C.I. transmitter.

An illustration from an old manual shows a VT98 shown in a piece of equipment

DX - News & Views

John Bazley VK4OQ
email: john.bazley@bigpond.com

New IRCs now on sale

Do not forget to check your IRCs before the end of the year!

New International Reply Coupons (the "Nairobi model"), will go on sale from the 1st July 2009, and are expected to remain valid until 31st December 2013. They will replace the current IRCs which must be redeemed before the end of the year, as their expiry date is 31st December 2009.

After a recent slight rise in the Sunspots, we appear to be going back to the old level! In spite of the poor conditions it is amazing the DX that has been worked, and during the coming months activity is promised from some further rare entities.

We now have more details on the anticipated DXpedition to **Glorioso Island**. Didier F5OGL informed 'The Daily DX' that logistics problems were the cause of the numerous postponements. This has been very frustrating for the team once all the necessary authorizations were in hand. So now the DXpedition to Glorioso is scheduled for July 9th to July 28th.

Among the French military ham radio operators will also be members of The French Foreign Legion and a military TV documentary press team. The video team's mission is to film the "entire ham DXpedition". The movie will be in the French language as well as English.

The crew includes: Freddy F5IRO, whose preference is CW. He was an operator on the TO4E DXpedition to Europa in 2003. Yves-Michel F5PRU prefers digital and CW modes. Philippe F4EGS will be responsible for the logistics in liaison with the French Air Fleet. Sylvain F5TLN will deal with the SSB side of the operation. The participation by Jean-Marc F5RQQ is pending.

It emphasised that this trip is not a DXpedition as their main activity will be to assist with numerous maintenance jobs on the island. Their July trip to Glorioso is a military operation first. Their free time is subject to local events that could take place in this part of the Indian Ocean.

The amateur radio team will take with them three complete stations including amplifiers. They will have Spiderbeams for the higher bands and verticals for 40, 80 and 160 metres.

The team realizes that July is not the best time for Glorioso propagation on the lower bands, especially on 160 metres, however they do plan to operate on Topband. Activity is planned for CW, SSB, PSK31 and RTTY.

During the team's stay on the island, they plan to participate in the IARU HF World Championships and the RSGB IOTA Contest and perhaps some others.

As was the case with the Europa 2003 DXpedition, one of the main goals while on Glorioso will be to preserve the fauna, the flora and the environment.

The Glorioso DXpedition team will have on-line logs (http://glorieuses2008.free.fr/searchlog.php), which are expected to be updated daily by Rafik F5CQ, who is also the Webmaster.

The QSL manager for this operation will be Didier F5OGL, who will accept cards both direct to his CBA or via the French QSL bureau (REF-Union Bureau).

DXpedition sailors Mike KM9D and Jan KF4TUG have now departed Honiara, the capital city of the Solomon Islands (H44), as they head for New **Georgia Island (OC-149)**. They should be active from there when you read this item. Mike and Jan were named DXpeditioners of the year at the SWODXA DX Dinner in Dayton. Congratulations to them!

Scott KC0KHA will be on a work assignment in **Mongolia**, from May 26th to July 31st. He is a biologist and plans to be QRV as JT1N and JT4N in his spare time. He will use JT4N while in the Gobi desert from June 10th to July 20th. Scott will have a Yaesu FT-897D as well as a Honda generator while in the desert.

A home brew vee beam and G5RV will be used as well as an assortment of VHF and UHF antennas for possible satellite APRS communications. He says to listen for him on 20 metres SSB and PSK during evenings and mornings in the western hemisphere. "*Amateur radio is supporting this US National Science Foundation funded research expedition to the Gobi of Mongolia*", says Scott. QSL via KC0KHA.

Peter ET3BN will be in **Addis Ababa, Ethiopia** for the next few years, QRV on CW and SSB. For 80 he has a delta loop. For 30, 17 and 12, a two-element Yagi; and for 20, 15 and 10, a 3-element; for 6 m a log periodic, but nothing for 160 and 40 so far. QSL to his Ethiopian address, Dr. Peter Haferkorn, P.O. Box 150194, Addis Ababa, ETHIOPIA. Peter also holds the callsign DM2BBN.

TK/F8BBL/qrp will be vacationing on **Corsica, EU-014**, August 1 to August 15. He will have his FT-817 and MP1 antenna. August 8 he will climb to the top of Punta di Buturetu, which is 870 metres above sea level. Look for him at about 1000 Z on 7032, 10118 or 7096. He may go to Sanguinaires Island the second week if he can find a boat and the weather and seas cooperate. QSL to his home call, direct or bureau.

IY0NGM will celebrate the 100 years since Marconi won the Nobel Prize in Physics. Look for this station from the ARI Frosinone in Italy, the IQ0FN group, April 25-July 20th.

Starting July 29th, W9CGI will be QRV from **Grand Cayman Island (NA-016)**. No callsign was mentioned. Activity will

Continued at foot of page 47

Robin L. Harwood VK7RH

A returned QSL card stirs thoughts of change

Today I received a letter from North Carolina and inside the envelope was a short note together with two QSL cards, one of which was mine.

It was dated the 11 April 1973 and was for a contact with a K4PFK. I cannot readily remember the QSO as it was 36 years ago and I must have been operating in my first ham shack, underneath the garage. I had a Yaesu FT-200 to a G5RV antenna, running a modest 100 watts PEP.

I was originally licensed two days before Christmas 1971 but I did not start until mid January 1972 and my first QSO was with Russ VK3AIX and I was so nervous and I recollect that he told me to go QRT. I think he thought I was a pirate.

Fortunately my next QSO was with Ron VK3AKC who calmed me down and Trevor VK7TB happened to be in his shack at the time. Ron was well-known here in VK7 as he was an EME pioneer and was a regular on 2 metres. Thanks to Trevor I got my first QSL card just two days later. Sadly I lost it when I made the move here to this QTH.

This led me to think about my early days as an SWL. I vividly recollect hearing the BBC General Overseas Service on my father's Philips 2262 dualwave radio in the depths of a 1956 winter. Dad was a teacher and was working at the Ashley Detention Centre, just outside Deloraine. We lived in a purpose built cottage and the antenna was a coil of wire bundled up against the side of the wall. It worked. London then sounded very differently from today. Announcers then spoke in Oxbridge accents and the British Empire was still in its heyday.

Today's announcers have many different accents, making it harder to comprehend. The Beeb as it is affectionately known no longer has the authority it once had. It was so easy to hear the chimes of Big Ben. The BBC was dominant on both 7150 and 9410 from Daventry from 0600 to 0730. It was so steady that the ABC used to relay "Radio Newsreel" at 4:15 pm each weekday on domestic stations.

15070 was another regular channel, especially in the summer months and this continued into the mid 1980s. I believe that they were forced to quit because they were outside the allocated segment for broadcasting in Europe. The Daventry site has long been dismantled and management of the senders has passed out of the BBC to a private company based in France.

The Beeb is still on shortwave, just. They no longer broadcast to traditional areas such as Europe, North and South America and the Pacific, yet are still heard to Africa and some parts of Asia. The BBC will shortly begin broadcasting some language services well away from London and Bush House, where they have been based since 1940. I believe programs in Hindi and Bengali will come from Delhi. Also English and French programming for Africa may be based in West Africa. Labour costs were given as the reason for this proposal and naturally upset workers based in London.

Radio France International in Paris is also undergoing restructuring. The government wants to axe several hundred positions and further curtail shortwave programming. This naturally led to a protracted industrial dispute which disrupted programming for a while.

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DX Continued from previous page

be mostly on 12 and 17 metres using PSK31 and SSB until August 10th. He will be running 50 watts to a vertical. QSL via his home call.

A group of operators, including VK2IR, VK3FY, VK3FGRC, VK3FT, VK2FPGR, VK3TZ, VK2RF and VK5MAV from the Hellenic Amateur Radio Association of Australia will be active as VK9NI from **Norfolk Island (OC-005)** from July 22nd until July 29th, IOTA Contest included. They plan to be active with multiple stations on 160-6 metres CW, SSB and RTTY. QSL via W3HNK. Further information can be found at http://vk9ni.com

Robert LA9QNA will be in **Longyearbyen, Svalbard** and QRV as JW9QNA from July 17th to July 22nd. He will be on 20 metres RTTY and participating in the CQ WW VHF Contest from the JW5E station. QSL via LA9QNA.

Bill NC1L (DXCC Manager) reports that he has emailed Vassil LZ1CL, the QSL manager for 5N/LZ1QK, asking to see paper work. For now 5N/LZ1QK, who has been operating from Nigeria since late last year, is on hold as far as DXCC credit is concerned.

And finally:

A new book by Roger Western G3SXW: author of "Up Two, Adventures of a DXpeditioner" contained descriptions of travels to many exotic corners of the globe but some readers felt the need for the human touch: "I want to hear what it really *felt* like, what you really experienced", so his new book titled "DX Delights – Tales of Travels with my Radio" deals with the human side of Dxpeditioning. This 130+page illustrated and signed book provides DXpeditioning entertainment and reading pleasure for all. Send cash or sterling cheque to: Roger Western G3SXW, 7 Field Close, Chessington, KT9 2QD, England. Price: GBP £12, USD $20, Euros 15. Or by PayPal: g3sxw@btinternet.com

Special thanks to the authors of *The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm **ar**

AMSAT

David Giles VK5DG
vk5dg@amsat.org

Six-monthly review of operational OSCARs

This month I present an updated review of the operational OSCARs and other satellites using amateur satellite service bands. All satellites listed here have been heard during March-May 2009 by myself.

Satellites added or revised since last review: LO-19, lO-26, FO-29, CO-55, RS-15, RS-22, RS-30, STARS, PRISM, KKS-1, PharmaSat and CP-6.

Failed satellites since last review: AO-16

The names of the satellites are given as OSCAR number, full name and (NASA catalogue number). Modes are represented by frequency bands: H=10 m, V=2 m, U=70 cm, L=23 cm, S=13 cm in order of uplink/downlink.

Linear transponders use CW and SSB. With the exception of AO-7's V/H transponder, all linear transponders are 'inverting' types and use LSB for the uplink and USB on the downlink. For AO-7 mode V/H use USB for both links. Most of the activity is in the middle of the passband.

Telemetry decoding programs for several satellites are available from Mike Rupprecht's website at http://www.dk3wn.info/software.shtml

Please note an error in last month's note on ANUSAT (new digital satellite launched). The launch date was 20/4/09, not 20/9/09.

AO-7 AMSAT OSCAR 7 (7530)

Launched: 15/11/1974

Status: Operational only when it is in sunlight. It may be in any mode. During non-eclipse periods it will alternate between modes V/H and U/V every 24 hours. Beacons are not always on. Currently AO-7 is going through an eclipse period that will end on 19th July 2009. Most of the time it will switch on mode U/V. After the eclipse period AO-7 will remain in full sunlight until June 2010.

Mode: V/H (old mode 'A'), linear, non-inverting.

Uplink: 145.850-145.950 MHz, Downlink: 29.400-29.500 MHz

Beacon: 29.502 MHz CW. Occasionally the 435.106 MHz CW or RTTY beacon may be on.

Mode: U/V (old mode 'B'), linear, inverting.

Uplink: 432.125-432.175 MHz, Downlink: 145.975-145.925 MHz

Beacon: 145.972 MHz CW at 10 or 20 wpm, intermittent operation.

Check the online log for current status at http://www.planetemily.com/ao7/main.php

AO-16 PACSAT (20439)

Launched: 22/1/1990

Status: Non-operational. Due to longer eclipse periods a low temperature sensor turns off the 70 cm transmitter after a few minutes. It will be several years before AO-16 returns to full sunlight and can be used regularly.

AMSAT-VK

AMSAT Co-ordinator:
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Group Moderator: Judy Williams VK2TJU
email secretary@amsat-vk.org
Website: www.amsat-vk.org Group site: group.amsat-vk.org

About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that Is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz
VK2RIS Saddleback repeater on 146.975 MHz
VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

In South Australia

VK5TRM Loxton on 147.125 MHz

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-VK HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

LO-19 LUSAT (20442)

Launched: 22/1/1990

Status: Semi-operational. LO-19 has been reported as non-operational but to quote Mark Twain, "The rumours of my death have been greatly exaggerated". LUSAT has its CW telemetry beacon operating continuously. The telemetry shows LUSAT's solar panels and batteries are in a good state of health. The BBS and digipeating operations have not been usable for many years.

Mode: -/U CW telemetry at 12 wpm with 45 second gaps between frames.

Beacon: 437.125 MHz

http://www.amsat.org.ar (In Spanish)

IO-26 ITAMSAT (22826)

Launched: 26/09/1993

Status: Semi-operational. IO-26 is in Master Boot Loader (MBL) mode. It transmits continuous BPSK carrier with the occasional telemetry packet.

Mode: -/U 1k2 BPSK

Beacon: 435.790 MHz (Note: this has shifted from the original published frequency)

http://www.amsat.dk/oz7sat/tlm/view.php?sat=io26

FO-29 FUJI-OSCAR 29 JAS-2 (24278)

Launched: 17/8/1996

Status: Operational as linear transponder. Most activity is around 435.850 MHz. The BBS and digipeater operation have not been used since 2003.

Mode: V/U linear, inverting.

Uplink: 145.900-146.000 MHz, Downlink 435.900-435.800 MHz

Beacon: 435.795 MHz CW telemetry.

http://www.ne.jp/asahi/hamradio/je9pel/index.htm

GO-32 Gurwin TechSat-1B (25397)

Launched: 10/7/1998

Status: Operational but difficulties are reported occasionally. Since the on-board computer crash on 30/3/2009 GO-32 has been sending telemetry and reloading operations were in progress.

Mode: V/U for APRS, 9k6 FSK

Uplink: 145.930 MHz, Downlink: 435.225 MHz

Mode: V/U for PacSat BBS, 9k6 FSK

Uplinks: 145.850 MHz, 145.890 MHz, 145.930 MHz, Downlink: 435.225 MHz

Mode L/U for PacSat BBS 9k6 FSK

Uplinks: 1269.700 MHz, 1269.800 MHz, 1269.900 MHz, Downlink: 435.225 MHz

BBS callsign: 4XTECH-12

Beacon callsign: 4XTECH-11

http://www.amsat.org/amsat-new/satellites/satlnfo.php?satID=14&retURL=/satellites/status.php

NO-44 PCSAT (26931)

Launched: 30/9/2001

Status: Operational only in full sunlight. One solar panel and the batteries are not functioning.

Mode: V/V 1k2 AFSK packet digipeater

Uplink: 145.827 MHz, Downlink 145.827 MHz

http://pcsat.aprs.org

SO-50 SAUDISAT-1C (27607)

Launched: 20/12/2002

Status: Operational

Mode: V/U FM voice with 67 Hz CTCSS tone

Uplink: 145.850 MHz, Downlink 436.795 MHz (but may switch to 436.800 MHz).

To switch the transmitter on you need to send a few seconds of 74.4 Hz CTCSS tone.

The order of operation is thus (allow for Doppler as necessary):

1) Transmit on 145.850 MHz with a tone of 74.4 Hz to arm the 10 minute timer on board the spacecraft.

2) Now transmit on 145.850 MHz FM voice using a 67 Hz CTCSS tone to access the transponder.

3) Sending the 74.4 Hz tone again within the 10 minute window will reset the timer. Users have reported difficulties.

AO-51 AMSAT-OSCAR-51 ECHO (28375)

Launched: 29/6/2004

Status: Operational

Mode: AO-51 is a versatile satellite that can be configured to operate in many modes, often two at a time. It can use FM and SSB voice, 9k6 and 38k4 FSK packet as a BBS or digipeater. It

Australian made

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has 3 transmitters (two on 70 cm and one on 13 cm), four 2 m receivers and a wideband receiver that has been used on 10 m and 23 cm.

The control team issues a monthly bulletin on modes and frequencies AO-51 will be using.

Default voice mode: V/U FM voice

Uplink: 145.920 MHz, Downlink 435.300 MHz (no PL tone required)

Default digital mode: L/U 9k6 FSK

Uplink: 1268.700 MHz, Downlink: 435.150 MHz

Beacon: 435.150 MHz 9k6 FSK

http://www.amsat.org/amsat-new/echo/CTNews.php

VO-52 HAMSAT (28650)

Launched: 5/5/2005

Status: Operational. VO-52 has two linear transponders that use nearly the same passbands. The Indian transponder is normally in use. Most activity is around 145.900 MHz.

Mode: U/V linear inverting.

Indian transponder:

Uplink: 435.220-435.280 MHz, Downlink 145.930-145.870 MHz

Beacon: 145.936 MHz continuous carrier

Dutch transponder:

Uplink: 435.225-435.275 MHz, Downlink 145.925-145.875 MHz

Beacon: 145.860 MHz CW 12 wpm preset message

http://www.amsat.in/hamsat.htm

Note: FM operation on VO-52 is permitted for QRP/ handheld. In India, SSB gear is not very common and the operations team have suggested that FM operators can use this bird. If you are planning to work FM, please use another part of the passband e.g. 145.920 MHz. It would be best to arrange a sked in advance, as VO-52 is rarely used in FM mode over VK/ZL. Excessive uplink power will cause the beacon to FM.

The following are mainly Cubesats. Reception reports are often well received and can result in a QSL card for your efforts. See websites for details.

An excellent website for the current status and information on all Cubesat launches is Mike Rupprecht's website at http:// www.dk3wn.info Ralph Wallio W0RPK has recently stopped providing information on the Cubesats.

CO-55 CUTE-1 (27844)

Launched: 30/6/2003

Status: Operational. From the first Cubesat launch CO-55 continues to send CW telemetry.

Mode: -/U CW telemetry

Beacon: 436.8375 MHz

http://lss.mes.titech.ac.jp/ssp/cubesat/index_e.html

CO-57 XI-IV (27848)

Launched: 30/6/2003

Status: Operational. From the first Cubesat launch, CO-57 continues to send CW telemetry. It also has an on-board camera. Pictures of the Earth can be found on the website below.

Mode: -/U CW telemetry

Beacon: 436.8475 MHz

http://www.space.t.u-tokyo.ac.jp/gs/en/index.aspx

CO-58 Xi-V (28895)

Launched: 27/10/2005

Status: Operational. CO-58 has an on-board camera. Pictures of the Earth can be found on the website below.

Mode: -/U CW telemetry

Beacon: 437.465 MHz

http://www.space.t.u-tokyo.ac.jp/gs/en/index.aspx

DO-64 Delfi-C3 (32789)

Launched: 28/4/2008

Status: Semi-operational. The linear transponder has failed. The control team switched it back to science mode on 29/1/2009. Often by the time it has reached VK/ZL the transmitter has stopped, so it will be heard here occasionally. If they change it to basic mode then the telemetry will be heard over VK/ZL on most passes. The telemetry can be demodulated and decoded using software from the Delfi website.

Mode: -/V 1k2 BPSK telemetry

Beacon: 145.870 MHz (primary) or 145.930 MHz (secondary)

http://www.delfic3.nl/index.php

CO-65 CUTE-1.7+APDII (32785)

Launched: 28/4/2008

Status: Operational. The CW beacon is on. The mode L/U APRS digipeater has been activated during weekends using 9k6 GMSK modulation. Reports from Japanese operators have proven the digipeater works.

Mode: -/U 437.275 MHz CW telemetry.

Mode: L/U 9k6 GMSK

Uplink 1267.603 MHz, Downlink 437.475 MHz

http://lss.mes.titech.ac.jp/ssp/cute1.7/index_e.html

CO-66 SEEDS II (32791)

Launched: 28/4/2008

Status: Operational. CO-66 is a Cubesat that transmits CW telemetry, packet telemetry and a pre-recorded message of voice and SSTV. Sometimes all three can be heard during a pass over VK/ZL as it changes modes. At 450 mW output, CO-66 has the strongest signal of the Cubesats.

Mode: -/U CW telemetry, 1k2 AFSK packet and FM Digitalker/SSTV

Beacon: 437.385 MHz

http://cubesat.aero.cst.nihon-u.ac.jp/english/main_e.html

RS-series satellites

RS-15 RADIO ROSTO (23439)

Launched: 26/12/1994

Status: intermittent. The beacon only comes on when satellite is in sunlight, and is not on every pass.

Mode: -/H on/off carrier of 2-3 seconds

Beacon: 29.352 MHz

RS-22 MOZHAYETS-4 (27939)

Launched: 27/9/2003

Status: Operational. RS-22 sends CW telemetry in a format similar to previous RS-series satellites.

Mode: -/U CW telemetry

Beacon: 435.352 MHz

http://www.dk3wn.info/sat/afu/sat_rs22.shtml

RS-30 YUBILEINY (32953)

Launched: 23/5/2008

Status: Operational. Only the CW beacon has been heard over VK/ZL. Other transmission types are heard when it is in range of the control stations in Russia. It has been heard by AO-51 users when they share the same footprint.

Mode: -/U CW telemetry

Beacon: 435.315 MHz (primary), 435.215 MHz (Secondary)

http://www.dk3wn.info/sat/afu/sat_rs30.shtml

Other satellites using amateur frequencies.

ISS (25544)

Launched: 20/11/1998

Status: Operational. The International Space Station has an amateur radio station that operates in many modes. Ultimately it depends on the manning crew's activities. Voice, digital, and SSTV modes are used. Sometimes experimental modes are tried; a recent example was a 23 cm FM repeater uplink on 1269.650 MHz.

Mode: U/V crossband FM repeater.

Uplink: 437.800 MHz FM, Downlink 145.800 MHz

Mode: V/V Digital / APRS 1k2 AFSK FM

Uplink: 145.825 MHz, Downlink: 145.825 MHz

Mode: V/V FM Voice, SSTV

Uplink: (Region 1) 145.200 MHz, (Region 2/3) 144.490 MHz, Downlink: 145.800 MHz

http://www.issfanclub.com/

http://www.rac.ca/ariss/

COMPASS-1 (32787)

Launched: 28/4/2008

Status: Operational. Compass-1 has a chirpy CW telemetry beacon that is normally sent every 3 minutes. If battery voltage is low it will send every 8 minutes. COMPASS-1 can be commanded by any amateur to send telemetry on demand using DTMF codes, though the satellite may not give a response each time. Every command will give a confirmation beep on 437.275 MHz.

**35## - request a test beacon CW

**36## - request a test packet 1k2 AFSK FM (UI-Frame)

**60## - request a housekeeping frame in 1k2 AFSK FM (KISS frame)

Mode: V/U DTMF command, 1k2 AFSK

Command: 145.980 MHz, Downlink 437.405 MHz

Beacon: 437.250 MHz CW telemetry

http://www.cubesat.de

STARS (33498)

Launched: 23/1/2009

Status: Operational. STARS is two satellites tethered together. Both 'Mother' and 'Daughter' have CW and 1k2 AFSK packet telemetry on 70 cm. The CW beacons are on continuously.

Mode: -/U FM 1k2 AFSK

Mother 437.485 MHz, Daughter 437.465 MHz

Mode: -/U CW

Beacon: Mother 437.305 MHz, Daughter: 437.273 MHz

http://stars1.eng.kagawa-u.ac.jp/english/index.html

PRISM (33493)

Launched: 23/1/2009

Status: Operational. Following from the success of CO-57, CO-58, the University of Tokyo built PRISM to carry a larger camera with a telephoto lens. The packet downlink may be only available over the command stations in Japan, though the CW beacon is on world-wide. PRISM also has an uplink channel but frequency and modulation details have not been published yet.

Mode: -/U 1k2 AFSK or 9k6 GMSK

Downlink: 437.425 MHz

Mode -/U CW

Beacon: 437.250 MHz

http://www.space.t.u-tokyo.ac.jp/prism/main-e.html

KKS-1 (33499)

Launched: 23/1/2009

Status: Operational. KKS-1 transmits a series of messages on its CW beacon. Its mission is to demonstrate a laser ignition thruster and reaction wheels.

Mode: -/U CW message.

Beacon: 437.385 MHz

http://www.kouku-k.ac.jp/~kks-1/kks-gs-top-e.htm

PharmaSat (35002)

Launched: 19/5/2009

Status: Operational. Pharmasat is the successor to Genesat-1. It is a miniature biological laboratory containing a scientific experiment to determine how microgravity affects yeast resistance to an antifungal agent. Pharmasat transmits 1k2 packet beacons every 5 seconds.

Mode: -/U 1k2 AFSK

Beacon: 437.465 MHz

http://www.crestnrp.org/pharmasat

CP-6 (35004)

Launched 19/5/2009

Status: Operational. CP-6 transmits a CW ident then a frame of 1k2 FSK packet telemetry every 2 minutes. The suggested method of reception is to use LSB instead of FM into your TNC. A decoder program for Windows, Mac and Linux that displays and sends telemetry to California Polytechnic State University is also available at the website below.

Mode: -/U CW + 1k2 FSK

Beacon: 437.365 MHz

http://moredbs.atl.calpoly.edu/

ar

VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

There is not a great deal of propagation activity to report on this month. However, Mike VK3KH discovered recently that there is still life in a seemingly dead band:

It is easy to think that winter time means that the VHF/UHF bands are dead, and that propagation is non existent, even for someone like me who has been playing this game for 30 years. But you never know...

Friday morning 5th June looked like most other mornings for the last few weeks. No sign of the DX beacons on two metres that normally signal a chance of propagation, and even Mr Hepburn was showing no hope. A check of the VK Logger also showed no sign of activity.

However, one interesting observation was I noted Phil VK5AKK was logged on. Had not seen him on the logger for some time. I have worked Phil lots of times over the last few years and he is always one of the strongest stations out of the Adelaide area into this location if there is propagation.

I also know from experience that if Phil is on the Logger around this time of morning (8.00 - 8.30 am Melbourne time), he will have his radio on while he makes his breakfast.

With nothing to lose, I thought it was worth a try calling in his direction. I put out a call, and then listened. Nothing. I considered QSYing to 144.200 for the Aircraft Net, and was about to do it when I heard Phil calling QRZ - not very strong but very readable.

I answered his call and he quickly came back with a 5/1 report. I returned his report as 5/1 also, and we then chatted briefly, commenting we had not heard each other for a while, conditions had been lousy, etc. We then said our 73s and the contact was over.

Now this contact is not startling, we have done it many times before, and many times with signals up to 5/9. But it was 670 km, and a good readable contact.

However it served to remind me that although we think the band may be dead, the research may tell you there is no propagation, it is still worth a try.

I just wonder how many times the band is open to somewhere, and because we only hear white noise from our receivers, we do not bother to call CQ. It is worth a try!

VK3UM Software Update

Doug VK3UM has been busy adding more features to his already comprehensive EMECalc program. This program can be used to model the performance of a planned station setup, or verify the performance of an existing station.

Despite the name, the program is not only for EME stations but also very useful for those interested in terrestrial weak-signal operation. The latest version includes a further 10 types of Dish feed including the RA3AQ designs, dual and single dipole configurations, dual patch (linear and circular) as well as Quad and Loop designs.

The software in a zip format may be obtained from several sites including:

http://www.vk3bez.org/vk3um_software.htm

Several other programs are included in the package including EMRCalc – a program that should be mandatory for every amateur to use to ensure conformity with the EMR regulations

VK3UM EME Activity

Speaking of Doug, he sent this short report on his recent activity during the DUBUS 23 cm 2009 Contest on May 30/31:

I was about an hour late getting on for my moon rise on Saturday and may have missed a few North American stations.

Conditions were excellent both days except at low elevation when considerable libration was evident. Unfortunately, the low angle made it harder for some in the northern hemisphere and reflected back on me when my greatest activity then occurred in the last few degrees of my moon. (with added ground noise).

As it happened, I worked PI9CAM starting at 0.2 degrees of moon on the Saturday but left someone in my 'moon shadow' on the Sunday! For me it was a rare event to actually work someone at 48 degrees elevation. On the high declination weekends it rarely gets above 28 degrees.

For a total of 54 QSOs and 48 multipliers, total score was 259,200 points.

A special thank you to David VK2JDS who came on CW unannounced and to Chris VK5MC who was running flea power to his new 10 metre dish. Very pleasant surprises.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

Welcome to Brian VK3CCR, Roland VK4VDX and Doug VK4ADC who have joined in the 2 metre FSK441 meteor scatter activity. Brian completed his first contact with John VK4JMC, Doug his first contact with Rex VK7MO and Roland using only 30 watts and a 10-element Yagi his first with Jim VK3II. Brian VK3CCR has also completed contacts on JT65a.

Phil VK4CDI is now active on 1296 MHz EME, using JT65c and has completed contacts with N9JIM, HB9Q, VK2JDS and RD3DA.

A North American meteor scatter group "Super 7" has introduced a "Ten Thousand Miles" award for completing FSK441 contacts over 1000 miles for a total of Ten Thousand Miles after 1 May 2009.

continued foot of next page

Silent Key

Ian Laurence Tinney VK4KAD

Ian Laurence Tinney, 'Tin', as he was known to friends, was born in Brisbane on July 24, 1948. Among his interests in life were amateur radio, photography, broadcasting and computer technology, and wandering the Queensland Outback. He had a special interest in the history of droving and early settlers.

He grew up in St Lucia, Brisbane, went to Ironside Primary School, then St. Peters, Indooroopilly. He became a technician in training in 1966 through the PMG, working in radio engineering at the ABC's Toowong studios in Brisbane. He also joined the Royal Australian Navy Reserve at HMAS Moreton (ships radio operator and helmsman).

Around 1967 he became involved with amateur theatre as a member of the Youth Players, while at the same time developing an interest in photography.

Later he returned to Brisbane and went to the University of Queensland to study systems analysis, then advanced and quantum mathematics. He joined the Army reserve as a signaller in the Queensland Bush Rifles, and extended his amateur radio interests.

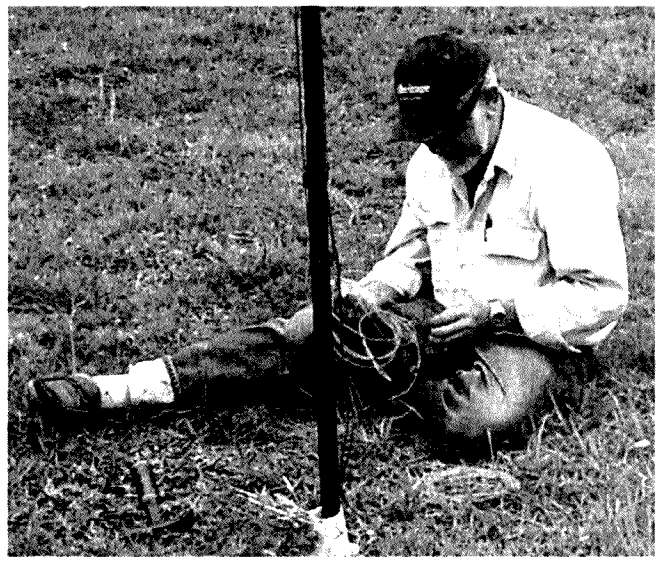
Rejoining the ABC in1975, he began a long career with them including management and outback remote broadcasts, until 2001. After leaving, he moved to Crows Nest. He became a member of the Crows Nest Bush Fire Brigade, completed his training and took on the job of brigade communications officer. Tin became the brigade secretary in 2005 and held that position until he passed away.

With his technical background he was an active radio amateur on HF. He was often heard chasing low band DX, in RTTY contests and experimenting with position reporting systems. He joined the Darling Downs Radio Club, and presented some interesting technical talks.

After an extended and tough fight with cancer he passed away at Toowoomba Hospice on 9 May 2009. His kindness, wicked sense of humour and true professionalism will be his legacy.

Submitted by Dougal Johnston VK4EKA.

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Over to you

Bouquet for GippsTech — Special Edition

Dear Editor,

I am somewhat ashamed to say that having been licensed for some thirty years, 2009 was the first year that I have attended a WIA AGM, this year held in conjunction with a special GippsTech at the Churchill campus of Monash University.

From my viewpoint the organisation of this event was flawless and the lecturers, presentations and lectures were most interesting.

I have to add that in many years as a student sitting in university lecture theatres, the presentation on software designed radios by Phil Harman was perhaps the clearest exposition of a technical topic that I have ever heard.

My thanks to all involved in the organisation of this event.

Kevin B. G. Luxford
VK3DAP, ZL2DAP

ar

VHF/UHF from previous page

There are awards for single band and multi-band with 6 metres being the easiest and 2 metres more difficult. Full details of the award requirements are at http://www.ykc.com/wa5ufh/Super7/S7Index.htm.

The first award issued has gone not to North America but to VK with Rex VK7MO completing 10,000 miles as follows:

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

ar

At right: Rex VK7MO's accumulation score on the more difficult 2 metre band

Ten Thousand Miles 2 Metre Inaugural Record—VK7MO

Date	Station	Distance (Miles)	Distance (km)
08-May-2009	ZL4DK	1157	1862
08-May-2009	ZL3TY	1214	1954
09-May-2009	VK4BG	1251	2013
09-May-2009	VK4JMC	1091	1756
22-May-2009	ZL4LV	1157	1862
22-May-2009	ZL3CU	1271	2045
23-May-2009	VK4CDI	1081	1740
23-May-2009	VK4EME	1186	1908
29-May-2009	VK4ADC	1102	1774
	TOTAL	**10510**	16914

Hamads *classifieds*

FOR SALE NSW

Radio parts, radio books, valves and test gear Nick (02) 9477 2134

WANTED NSW

FT-902 in excellent condition, also acc. to make complete line up including speaker, vfo, tuner, transverter and FL-2100Z if available. Cash buyer. Thanks. Mike VK2OT (02) 6647 3271

ADMIRALTY HANDBOOK OF WIRELESS TELEGRAPHY Vol I could somebody help, Nick (02) 9477 2134 L20106.

FOR SALE VIC

From the deceased estate of VK3CBE. KENWOOD automatic antenna tuner - model AT-250. $350 BWD Oscilloscope - model 821. Dual beam. 50 MHz bandwidth. Operator & service manual. $250 VK3ZAN - QTHR. emaildotbob@netspace.net.au - Phone 03-51567654.

TELEX TX20, with stand, spare boards and service manual. Contact Brian VK3TRI 03-59685-384 A/H

CHIRNSIDE CA33 20-15-10 M very good condition with instructions ready to pick up VK3MMM 59 Cranbourne Road Frankston 3199 $250 (03) 9781 2886

TONO 7000E plus power supply and TONO monitor, manual with original packing, good order suitable CW learner or high speed one owner $150 lot Geoff VK3ED 9746 1438

WANTED VIC

Wanted, an AR8 receiver, and or AT5 transmitter Also interested in any valve RX/TX. Working would be good but any condition OK. Will pay a fair price plus all transport costs. Genuine Collector. Noel Laidlaw VK3JOO, QTHR either email at laidlaw@dodo.com.au or phone of an evening on 03 54641451

Either the power supply transformer or a complete FT-101ZD in any condition, so long as the transformer is ok. Colin Schultz VK3COL QTHR vk3col@wia.org.au 0359861019 0408997819

FOR SALE QLD

Complete HF Station comprising a YAESU FT-1000MP HF tx/rx, includes a MH-31 hand held mike, a MD-100 desktop mike, SP-8 loud speaker with audio filters and 2 additional COLLINS filters in the intermediate frequencies. Includes a FL-7000 solid state linear amp capable of turning out 400+ watts. This combination allows the FT-1000MP to control the band selection in the FL-7000. Also the FL-7000 is able to control up to 4 separate antennas via a YAESU FAS-1-4R remote antenna relay (which has not been used since new). I have a full workshop manual for the FT-1000 MP as well as an Operating Manuals for the receiver and linear. I am currently using a GAP TITAN vertical antenna on all bands 80-10 m.

At today's prices this setup would set you back in the range of $10,000.00 plus. I am retired and considering moving to a smaller habitat in the not too distant future. All the equipment is in excellent condition and working order. A minimum offer of $4500.00 will secure the lot. Contact Harry VK4EL on 07 5445 2647 or email glenviewinfo@optusnet.com.au Mobile: 0408997819

Deceased Estate of my late father Joseph Parniczky: 1978 Manufacture Late Model COLLINS HF Radio Equipment. KWM-2A ROCKWELL COLLINS emblem HF transceiver with COLLINS accessories, 312B-5 VFO, 312B4 Speaker console, two 516F-2 AC Power Supply, Two DL-1 Dummy Loads, One 75S-3C receiver, One 32S-3 transmitter (round emblems) two SM-3 Desk Mikes, One COLLINS 30-S1 HF linear amplifier. Three COLLINS 351R rack mounting adaptors. One HENRY 2K HF linear amp, One ETO ALPHA PA-76PAE HF linear amp Both Export Versions with 10 metres factory Installed. TELREX sky needle big bertha rotatable mast, Rotator &TELREX HF Quadbander trapped Yagi for 10-15-20-40 metres. Prefer Not to Separate, Sell as One Complete Package. Open to sensible Offers, Complete Owners Manuals All Items. Andrew Parniczky VK4FBI, PO BOX 1166, Coolangatta, 4225.QLD email vk4fbi@yahoo.com.au QTHR

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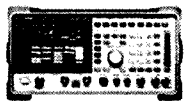
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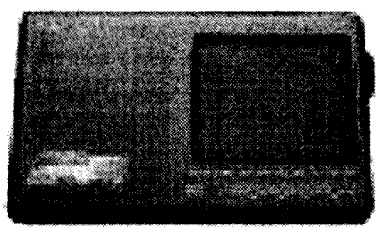
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VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 4339.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15. Tuesday 2100 local VK7RMD NW 146.625.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.180, 145.400 IRLP 6800 Katherine and 146.900 Darwin. Sunday 2000 local 145.400 IRLP 6800 Katherine.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

VK3ILH

Currie Lighthouse King Island
16th & 17th August 2008





John VK3PZ

The Currie Lighthouse

For the full ILLW story see pages 28 and 29.

And now for a bit of visible spectrum information. First lit in 1880, the lighthouse is constructed from more than 300 pieces of wrought and cast iron fabricated in England and assembled on site. The light flashes every 6.5 seconds from a 1000 Watt 120 V Tungsten Halogen Lamp with an intensity of 260,000 CD. The lantern stands 43 metres above the sea on a tower 21 metres high and is visible 22 nautical mile to sea.

It helps guard one of the most dangerous pieces of navigable water in the world, the entrance to Bass Strait between Cape Otway and King Island. This was the first landfall sailing ships would make after leaving Table Mountain in South Africa more than 5000 nautical miles astern. With that distance, and the Roaring Forties driving them on, any small error of navigation was disastrous, as it was for the more than 100 wrecks which litter the King Island coast. The loss of *The Cataraqui*, near what is now Currie, with the loss of more than 399 lives, remains Australia's largest civil disaster. The light and Currie harbour at dusk is shown at right.





Another King Island lighthouse is at Cape Wickham, at the north of the island. It is made of local stone and at 48 metres is the tallest light in the Southern Hemisphere. With its counterpart on Cape Otway in Victoria it marks the bounds of the "Eye of the Needle", the 45 nautical mile wide entrance to Bass Strait.

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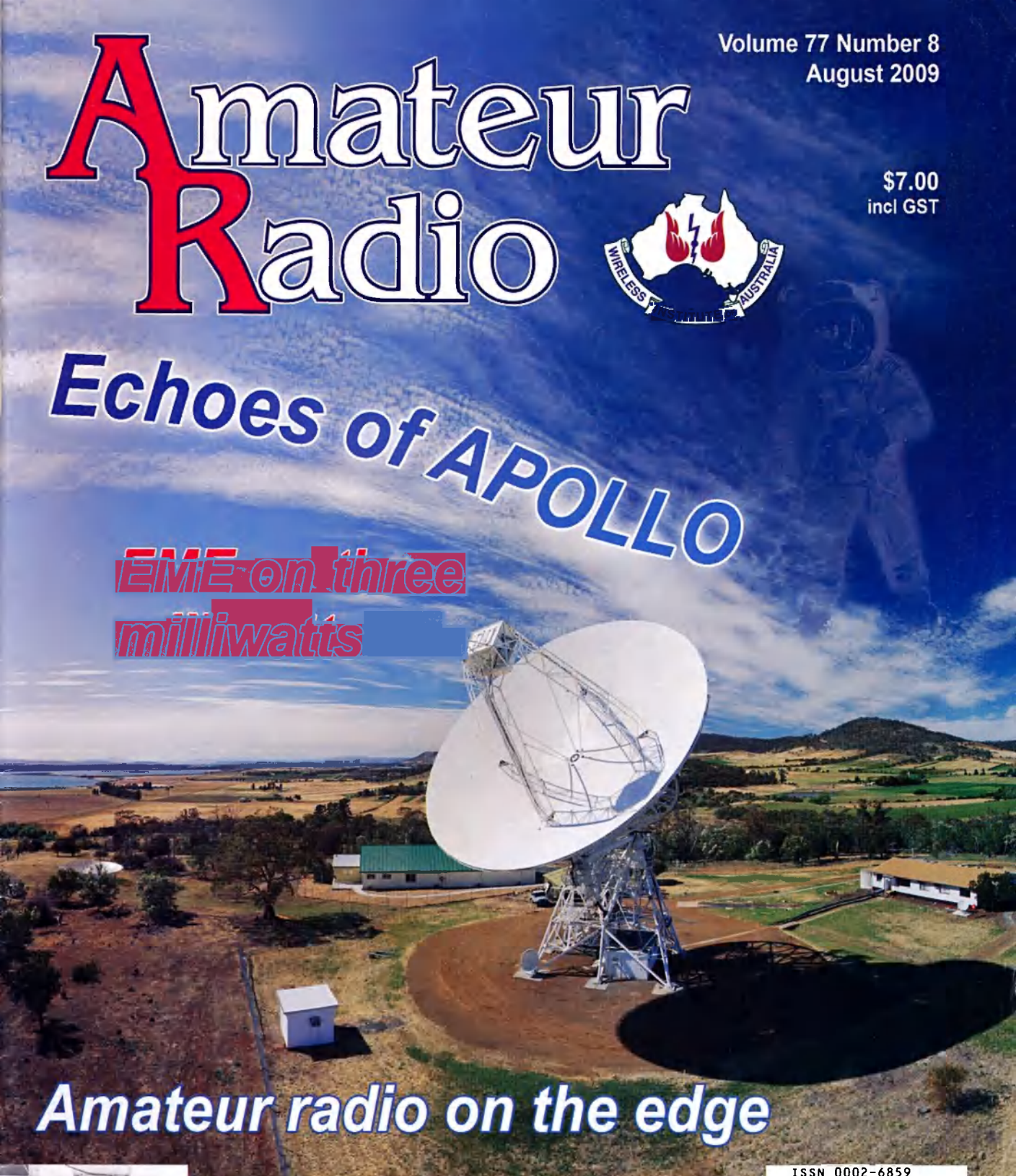
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Amateur Radio

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REMEMBRANCE DAY CONTEST

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This contest commemorates the amateurs who died during WWII and is designed to encourage friendly participation and help improve the operating skills of participants. It is held close to 15 August, the date in 1945 when hostilities ceased in the south-west Pacific. The perpetual trophy (shown) is awarded annually to the State or Territory with the best performance. The winner holds the trophy for 12 months. They are also given a Certificate, as are leading entrants in each state/category.

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Information from WIA WA website courtesy of Neil Penfold VK6NE

Amateur Radio

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Our Cover this month

This issue features the Echoes of Apollo activity weekend — The World Moon Bounce Day — held over the last weekend in June. The telescope featured largely in the event and is the 26 metre radio telescope at the University of Tasmania's Mount Pleasant Observatory near Hobart.

Telescope photo by Dr Jim Lovell, UTAS; Buzz Aldrin image courtesy of NASA; Design by G Nieman.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back Issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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Editorial

Peter Freeman VK3KAI

A busy month (again)

The last month has again been busy in Churchill. On the radio front, there has not been much happening in the VK3KAI shack – work and other matters have been at the forefront. Therefore there has been another month of minimal progress on my long list of "to do" jobs.

A major event occurred, for both myself and the local club – the annual GippsTech event was held on the second weekend of July. We were hoping that hosting the WIA AGM Weekend of Activities, including GippsTech – Special Edition, would not seriously impact on our club's signature event.

Although registrations were initially slow, we ended up with 125 people registered, which included 13 for the partners' activities. I have not had time to look back at the records, but this must be close to the maximum number of participants to date.

We enjoyed a very full weekend of talks, with a predominance of technical topics and some of more general interest. Everyone seemed to be very happy overall with the presentations, with many only complaining that the event was too short.

Several suggested possible topics for next year. Of course, much like this magazine, the event depends on individuals volunteering to present material on a topic. We shall see if we can convert some of the interest into real presentations for next year!

I am not sure if we will be able to source a detailed report for this magazine, but there was insufficient time to include a report in this issue.

I do like to keep work separate to hobby, but the end of semester becomes crazy, with increased administrative loads on top of the need to mark large piles of examination papers – enough of that topic – it can be rather depressing..... On top of the end of semester workload, there is virtually no respite before one is busy finalising the details for the commencement of semester two.

Oh well, only another 13 weeks or so until it all happens again. At least once that is all over, there is a little respite over a few weeks of summer before it all starts again next year.

Echoes of Apollo

This issue features reports from Tasmania and Victoria of the Earth-Moon-Earth contacts made over the last weekend in June – designated as World Moon Bounce Day. The idea, as far as I can tell, arose from Pat Barthelow in the US, with Robert Brand locally in Australia also promoting the event.

Whilst the event was about a month early for the fortieth anniversary of the Apollo 11 landing on the moon, the event dates were chosen to allow for the possible inclusion of Australian earth stations which have limits with regard to actually pointing at the moon: For those not aware of the orbital mechanics for the moon, it can vary significantly with respect to the "declination" – the plane of the moon's orbit moves with respect to the Earth's equator.

Whilst all of the proposed activities may not have eventuated, it is clear that many amateurs around the world were active on the 23 cm band over the weekend. Many had local television news coverage, providing an excellent lead in to the Apollo anniversary activities and also promoting amateur radio in general and EME in particular.

It will be interesting to see if this activity continues. What is quite clear is that the general idea "had legs". Congratulations to all Australian amateurs who became involved. I especially thank Rex VK7MO, Justin VK7TW and Doug VK3UM for their timely detailed reports.

Contributions

Thanks to the people who contacted me, prompted by the request for articles published on the July mailing labels. Several articles will be published shortly.

As I have implied above, this magazine relies on YOUR contributions. Yes, the article review process may take time, but most are accepted and published.

It has taken some time to come to fruition, but the September issue should see the appearance of a new occasional column – Foundation Corner. We are keen to have more articles that are aimed at our Foundation licensee readers, so please think about material that you can collate into an appropriate article.

Or let me know about a topic of particular interest and I will source an article or pass the suggestion on to our new contributor.

More news on this topic next month!

Cheers, Peter VK3KAI

ar

Michael Owen VK3KI

The increasing importance of the regional organisations

I believe that one of the most important functions of the WIA is to act to protect and enhance the privileges of radio amateurs.

The very existence, the basic regulation and frequency bands of the amateur and amateur satellite services originates in the Radio Regulations of the International Telecommunications Union, the ITU, formulated and amended through its World Radiocommication Conferences (WRC) held every three or four years.

So, to perform its function the WIA must work within the framework that leads to each WRC, to deal with those agenda items that may affect, either directly or indirectly, the amateur services.

In this Comment I want to raise some issues in relation to this function, and to do this I want to look at both the processes of the ITU and the processes of our regional telecommunications organisation, even though talking of the two processes does make it all look a bit complicated.

An ITU Conference Preparatory Meeting (CPM) is held immediately after a WRC to establish a work plan for the next WRC. Technical studies are assigned to various Working Parties in the ITU Radiocommunication Sector (ITU-R). The outcome is an agreed text for a comprehensive technical report that is adopted at a second CPM held about eight months prior to the WRC. That CPM develops a Report that sets out various summaries and an analysis of the results of the studies, setting out various methods to satisfy each agenda item, and regulatory and procedural considerations.

The amateur services are primarily represented at the CPM and in the ITU-R Sector technical studies by the International Amateur Radio Union, the IARU, which participates as an international organisation and is a Sector Member with the ability to provide direct input, primarily through the International Secretariat, the ARRL. Amateurs may also be members of participating national delegations.

In January this year ARRL CEO and IARU Secretary David Sumner K1ZZ distributed a paper describing the current state of the evolution of the process by which the international Radio Regulations of the ITU are amended by a World Radiocommunication Conference (WRC).

David stressed the growing importance of the regional telecommunications organisations – he called them RTOs, but because in our world RTO has such a precise meaning, I will call them ROs - suggesting that it is now the RO that has become the mechanism by which agreement can be reached on many matters. He argued that the ITU, which tries to operate as much as possible by consensus, with 191 member states, 85% of which participate at least on a token basis, would find it very hard to reach agreement without the ROs.

The six ROs that participate actively in the WRC process are:

African Telecommunications Union (ATU)

Asia-Pacific Telecommunity (APT)

Conference of European Postal and Telecommunications Administrations (CEPT)

Inter-American Telecommunication Commission (CITEL)

Arab Spectrum Management Group (ASMG)

Regional Commonwealth in the field of Communications (RCC)

The RCC is comprised of the countries in and around the former Soviet Union.

The voting members of the ITU, a specialised agency of the United Nations, are sovereign states, or separate countries. The IARU does not have a vote at a WRC, it can only be an observer.

For many years the CEPT has been very effective, presenting common positions on many issues at WRCs. A common position is simply a bloc of votes on a particular issue by countries who have reached agreement on that issue and are the members of the RO.

In recent years, the meetings of the APT conference preparatory groups to identify common positions for the next WRC have become increasingly important. For example, before the 2003 WRC a common position was not adopted unless there was a real consensus in relation to the issue. Now the mechanisms to identify a common position, representing the vote of only a number of member countries, are much more effective.

The importance of the bloc of votes represented by the APT APG (as the APT conference preparatory group is called) is certainly recognised by our own administration.

The second of probably four meetings of the APG for the next WRC, now to be held in early 2012, I guess now to be referred to as WRC-12, was held from 22nd June to 26th June this year in Hangzhou, China.

At an international level, the three IARU Regional organisations are responsible for representing the amateur service to the ROs in their Region.

IARU Region 3 participated in the APG in China and was represented by Director Shizuo Endo JE1MUI.

IARU Region 3 Secretary Jay Oka JA1TRC was a member of the Japanese delegation, representing the amateur service and nominated by JARL. IARU Region 3 Director Joong-Geun Rhee HL1AQQ was a member of the Korean national delegation, representing a number of interests.

IARU Region 3 submitted an information paper on the agenda items for WRC-2011 that concern the amateur and amateur satellite services, particularly focussing on agenda item 1.23, which is the possibility of a new secondary allocation to the amateur service of about 15 kHz somewhere in the band 415 – 526.5 kHz.

The growing importance of the ROs, particularly in our Region–the APT–present a number of challenges, some of which will, hopefully, be addressed at the upcoming Fourteenth IARU Region 3 Conference in Christchurch from 12 to 16 October 2009.

Continued foot of next page

A Call For Historical Articles

Peter Wolfenden VK3RV

With the Centenery of Amateur Radio in Australia coming up next year, Amateur Radio intends to run a series of articles about the development of the activity in Australia. We need your help.

Prior to 1910 a very limited number of individual experimenters were transmitting wireless signals; the vast majority were only attempting to receive transmissions.

On the 11 March 1910 a group of Wireless Telegraphy enthusiasts met at the Hotel Australia in Sydney to discuss the formation of an organisation to represent them. Established as **The Institute of Wireless Telegraphy of Australia**, it changed its name to the **Wireless Institute of New South Wales** about 10 months later.

A similar group was established in Melbourne during 1911, **The Amateur Wireless Society of Victoria**, it too changed name later to the **Wireless Institute of Victoria**.

As interest grew in the new science, district clubs started to form and during the mid 1920s radio clubs were numerous. Most of these clubs were predominately made up of licensed receiving members but they were keen to learn about wireless. Membership came from all walks of life. Some clubs even had very senior academics and legal people as active members. The "magic" of wireless was capturing the public's imagination and even more so when amateur experimenters blazed the new trails of world-wide communication using short waves and low power. The ability to communicate with like minded people in distant countries captured the public's imagination and the amateur ranks grew substantially.

One hundred years on, clubs still form the focal-point for enthusiasts to meet their fellow amateurs and obtain technical and social connexions; but more than ever before, it is paramount that a national umbrella organisation exists to retain the amateur experimenter's hard won rights for access to the radio spectrum!

So in 2010, the Wireless Institute of Australia is proud to celebrate – **100 years of organised private (or amateur) radio communications in Australia.**

During 2010 we intend to publish a series of articles on the history of amateur radio in Australia.

Perhaps you can contribute? You may be able to write a history of a club, or perhaps some events associated with radio, perhaps the story of an individual.

Please submit your article, preferably with some illustrations, to ***Amateur Radio***. All historical articles should be submitted to the WIA Centenary Committee, who will ensure that the best are published in one of the 11 issues of *AR* in 2010.

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Echoes of Apollo — the genesis

Robert Brand

Making EME history about one of the most notable events in living memory.

The *Echoes of Apollo* project began when Pat Barthelow AA6EG from the US contacted the Overseas Telecommunications Veterans Association (OTVA) (http://www.otva.com/).

Pat's intent was to help achieve an historic EME contact between the Jamesburg Earth Station in California, USA, and the Parkes Dish in NSW, Australia, as both had taken part in the Apollo 11 TV coverage around the world in 1968.

His contact was in December 2008 but by mid January 2009 the OTVA felt that this was beyond their resources and legal capabilities. Robert Brand, an Australian member of the OTVA, became involved and Pat and Robert formed the *Echoes of Apollo* (EoA) group.

It was decided that EoA should include the rest of the world in the plans and *World Moon Bounce Day* was created.

The project operates in a "not for profit" mode and includes many opportunities for amateur activities.

The dates and plans were circulated around the world and EoA received support from both the University of Tasmania using their 26 m dish at Mt Pleasant and the SRI International's dish at Stanford University.

World Moon Bounce Day was proposed to be similar to the Jamboree of the Air and include children and students. Broadcast radio and TV coverage occurred in Australia and Switzerland.

WIA comment

Continued from page 3

May I identify some of the broader issues as they occur to me?

The IARU in its present structure is essentially four separate organisations addressing the same issue in at least four separate forums, only loosely held together by the Administrative Council, meeting only annually. While there can be no doubt that each shares a common aim, how do we develop and maintain and adjust a policy for each WRC that each IARU entity can follow? In simple terms, how can we coordinate the various IARU entities working to a common end?

Equally importantly, how do we ensure that information flows to and from those from a national society representing the amateur services at a national level of WRC preparation?

How do we ensure that each of the IARU regional organisations obtains the funds and develops and retains the expertise and will to represent the amateur services effectively to each of the ROs I have identified?

Would a change in the structure of the IARU be likely to improve the ability of the IARU, either as a number of organisations or as a single organisation, to better represent the amateur services?

Closer to home, given the growing importance of the APT APG, should the WIA be looking to nominate an amateur specialist not only as a member of our national delegation to the WRC but also to at least some meetings of the PG?

ar

A transmission line balance test meter

Lloyd Butler VK5BR

Here is a simple meter to check the balance of currents running in the two legs of a transmission line. It can be used to check the balance of currents between the inner conductor and the outer conductor in a coax cable as well as between the legs of an open wire pair.

Introduction

A typical amateur radio antenna installation makes use of a simple dipole or other balanced form of antenna fed via a coaxial transmission line.

Because the line is unbalanced, some form of unbalanced to balanced coupling is normally necessary between the coaxial line and the antenna. Without this coupling, a condition is set up where currents running in the inner and outer legs of the coax line are unbalanced and a common mode or longitudinal current component is developed along the length of the line, causing radiation from the line.

Apart from distorting the radiation pattern inherent to the antenna proper, it encourages annoying induction into equipment and wiring within the radio shack as well as on receiving encouraging induction of vertically polarised near field noise.

A typical balancing interface is the choke balun which must have sufficient common mode rejection impedance to minimise the longitudinal current component. Whilst most radio amateurs possess an SWR meter which can be used in series with the coax line to check how well the antenna is matched to the 50 ohm line, it gives no indication that the currents running in the two legs of the line might be unbalanced.

The SWR meter can show a perfect 1:1 SWR indicating that the antenna is loading the line with a resistance of 50 ohms. However with such a condition indicated there can still be a high longitudinal component flowing and radiation from the line.

Whether there is a serious unbalance of currents in the line legs can easily be checked by measuring the two currents. However it does not seem to be something which is routinely done in checking out the antenna system and verifying whether the coupling interface (such as the choke balun) is adequate for the job.

To check out balance of line leg currents in such antennas as the EH, I have previously made use of thermocouple RF ammeters, one inserted in series with each leg. I experienced current difference as high as 2 to 1. Such RF meters were commonplace in transmitters of an earlier era but I do not see them any more as items in our local electronics shops. Whilst Old Timers like myself still have them, they are probably not too plentiful on the shelves of radio amateurs more recently introduced to amateur radio.

Instead it seemed to me that there was a need for a simple test unit to check out the line balance by connecting it in series with the coax line much like one would connect in the SWR meter to check out the line to antenna matching. So the 'transmission line balance test meter' is born.

The balance test meter

The circuit diagram is shown in Figure 1.

All we need is two identical ferrite toroidal cores to make up current transformers, one placed in series with each leg of the coax line. The outputs from the secondaries of the two transformers are fed through a selection switch into a rectifier and filter circuit to give a line current indication on a micro-ammeter.

By selecting one, and then the other, of the two positions of the switch, the currents in the two legs of the line can be compared. If near to equal, we can be satisfied that the balance is adequate.

If different, there is a common mode current component on the line and we can expect it to radiate. To get rid of this component, we may have to improve the balancing interface between the line and the antenna. If a choke balun is used this might mean increasing the inductance of the balun unit.

In my unit I used Philips Ferroxcube cores type 97170 which are only 9 mm in external diameter. As I have had these for well over 20 years, they are likely to be no longer available but almost any small toroid with ferrite suitable for HF should do the trick. I placed 15 turns of enamel covered wire on each toroid. Neither the wire gauge nor the number of turns is critical but

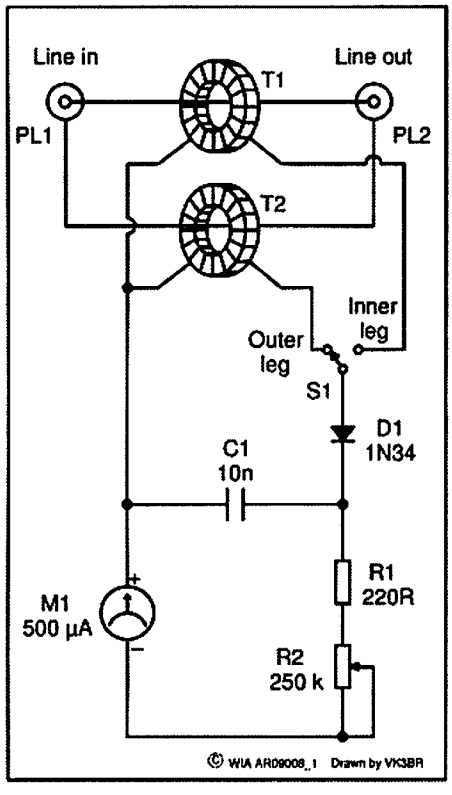


Figure 1: The circuit diagram of the balance meter.

the transformers as made must be identical. The wound toroid is shown in Photo 1.

The 500 microamp meter used was selected from the spares box simply because it was a small one which fitted nicely in the housing box. With this meter, I get a comfortable reading using about 10 to 15 watts running in a 50 ohm line.

However if the meter has to be purchased, I suggest aiming for a 50 or 100 micro-amp movement which would allow operation on considerably lower power.

I used a plastic box which I purchased rather than one of the aluminium boxes I had on hand. I did this so that in fitting input and output connectors to the box, the outer poles floated.

The connectors were mounted close together and their pole connections were each strapped together with the strap passing through one of the wound ferrite cores to form the primary of the current transformer.

I used BNC connectors which by habit I have always used on my test gear. However the so called UHF connectors are quite standard on most commercially made amateur radio transceivers and one might prefer to fit the usual SO238 sockets.

The finished unit can be seen in Photo 2. Photo 3 is a look at the rear. As can be seen, I found a spare tag strip to mount the few resistors and the capacitor.

Check-out and use of the unit

To check out the test unit, feed the output of the transmitter set for low power through the unit into a 50 ohm dummy load using coax links. Set the transmitter output for low power. Make sure that the load is floating so that there is no return path from the dummy load via an earth connection.

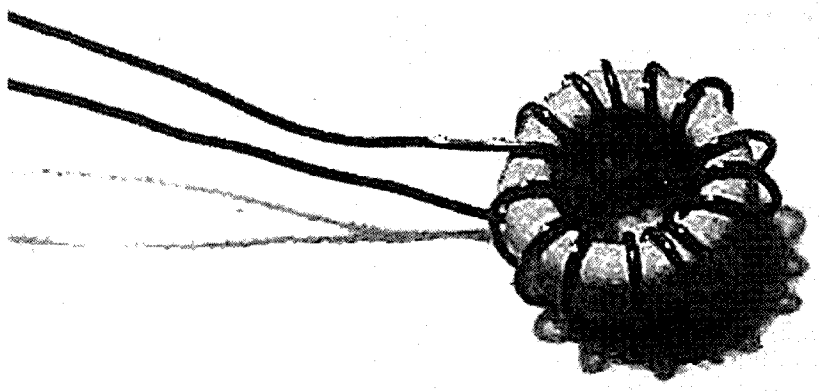


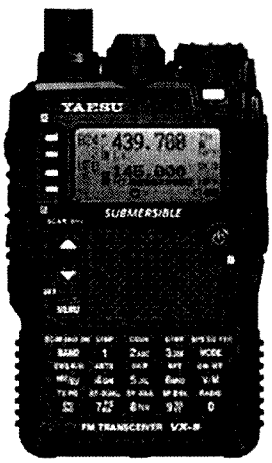
Photo 1: The toroid core used in the circuit.

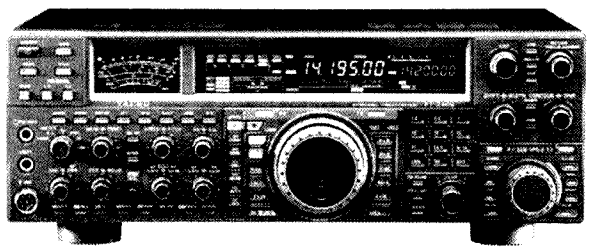
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Adjust for a suitable reference reading on the meter, adjusting the transmitter power, or the sensitivity control R1 on the unit, or both. The meter reading should read the same for both positions of the switch SI and if so, the unit is ready to connect in series with the transmission line to check the line leg balance.

If, when connected in series with the line, the meter reads near the same for both positions of the switch, the currents in the inner and outer legs of the line are near the same and one can be satisfied that there is little common mode current running in the line.

If they are considerably different, then may be an improvement in the antenna coupling interface is indicated.

I have talked essentially about currents in the inner and outer legs of a coax line. However as the connectors in the test unit are floating, the unit can also be used to check the comparative currents running in a line pair such as a balanced open wire feedline.

I wondered how much mismatch would be introduced in a 50 ohm line by the insertion of the coupling straps with the current transformers. So I fed the transmitter through an SWR meter and the test unit into a precision 50 ohm load.

For 1.8 MHz and the HF amateur bands, there was no noticeable shift in the 1:1 SWR reading with the test unit connected except for a very slight shift at 28 MHz. I did observe that to get the same meter readings, a little more power was needed at the higher frequencies than at the lower frequencies. I did not think this was important as the meter only had to make a comparison between two readings both at the same frequency.

I was not looking to use the unit at VHF but I did try it out on the two metre band. The meter gave readings OK but it did upset the SWR reading considerably.

So to make a model of the unit for VHF, some improved form of current monitoring is indicated, such as the method used on SWR meters made for VHF.

Conclusion

In conclusion I repeat what I said at the start. Checkout of whether there is common mode or longitudinal current component on the transmission line seems to be something which is rarely carried out.

I have described a very simple instrument which can do the checkout by simply comparing the currents in the two transmission line legs. It is suitable for use on the HF bands and the 1.8 MHz band and can be used to check both coax lines and line pairs.

If there is a longitudinal current component developed in the line, one can never be sure whether performance achieved is due to the antenna proper or due to radiation from the transmission line. Hence the need for this sort of test.

Footnote

If an unbalance of currents is measured in the legs of the transmission line, an interesting experiment is to measure the current running in the earth connection to the transmitter.

To do this, the transmitter has to be isolated from the power mains, either by running it from batteries, or inserting an RF filter in the mains lead. (In testing for unbalanced current in the coax line feeding EH antennas, I found that the current measured in the earth connection was equal to the difference in the currents measured in the inner and outer legs of the coax.

I would be interested to know what result someone else might get if they carry out this particular experiment).

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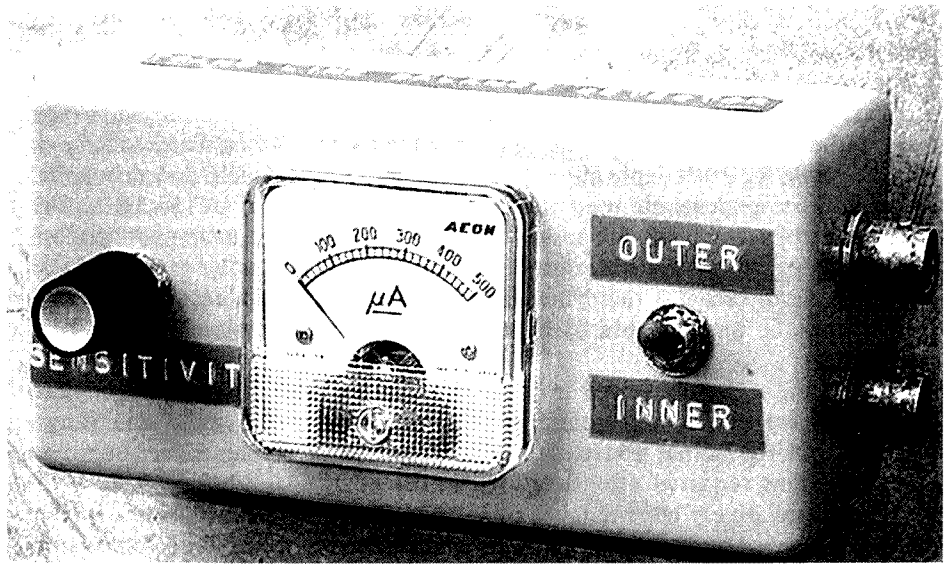


Photo 2: The front panel of the completed meter.

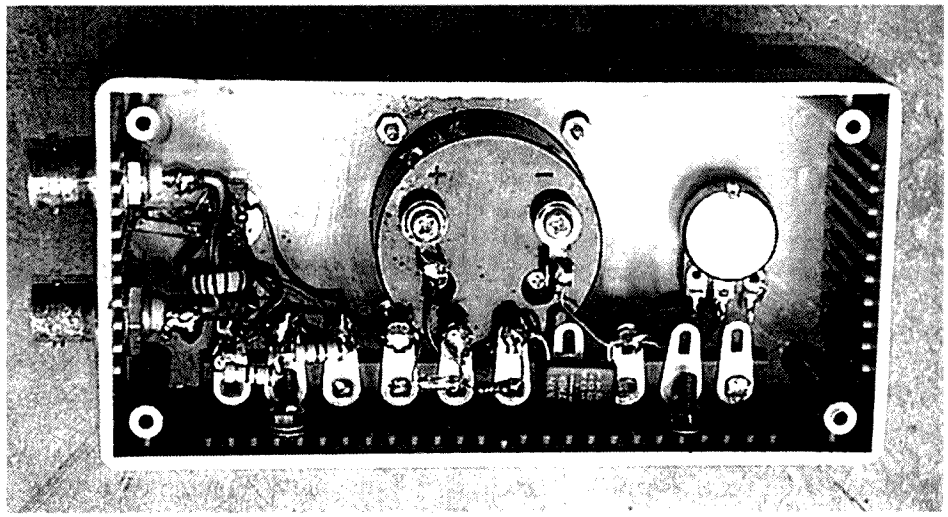


Photo 3: An internal view of the meter from the rear, showing the component layout.

A phasing type transceiver for 144 MHz – Part 1

Dale Hughes VK1DSH

This article describes the design and construction of a SSB transceiver for the 2 metre band. The original intent was to develop the device as a replacement for an elderly IC-202 which is used as the IF system for a 3 cm transverter; however it quickly became apparent that the unit could be used as a stand-alone transceiver as well. This dual functionality is reflected in the ability to bypass and disable the transmitter power amplifier and the provision of rear-panel connectors for the low level RF signals.

The design uses the techniques of direct conversion (sometimes called 'zero-IF') and 'phasing', or 'image rejection', whereby the unwanted sideband is cancelled out through manipulation of the phase and amplitude of both the carrier frequency and modulating audio frequencies. Conceptually it is a relatively simple process, but implementation can be complicated.

The intent of the article is to describe the various circuits and techniques used, rather than to present a design that is suitable for exact duplication. No specialised components are used and a wide variety of substitutions are possible and even desirable; the determined constructor can create a radio that is entirely unique and capable of high performance.

None of the techniques used in this transceiver are new or exceptionally difficult, but the actual construction and alignment requires attention to detail and a relatively large number of components.

Much of the design is based around work published in various books, magazines and web pages and intending constructors should consult the references supplied for further theoretical and practical information. In particular, the reader should consult the ARRL publication "Experimental methods in RF design" (Reference 1) for detailed information on phasing networks and direct conversion techniques. The book contains a wealth of relevant information and is highly recommended.

General description

Figure 1 shows the block diagram of the transceiver. The transceiver uses the technique of 'direct conversion' except that the modulation and demodulation takes place at 116 MHz instead of 144 MHz; a mixer and 28 MHz variable frequency oscillator are used to convert the 144 MHz signal to/from 116 MHz. This was done so that a fixed frequency RF quadrature network could be used to generate the required quadrature (90 degree) phase shift of the carrier frequency.

Considering the receive signal path first: the incoming signal at 144 MHz passes through the antenna relay, a band-pass filter and RF amplifier. The amplified signal is then switched through to the first mixer which 'down converts' the 144 MHz signal to 116 MHz. The signal then passes to two mixers that are driven by the quadrature 116 MHz local oscillator which produces two outputs: a 'I' or in-phase channel and a 'Q' or quadrature-phase channel. Both the channels are amplified separately before passing through an audio quadrature phase network, combined and amplified for listening.

The transmit path is very similar and the same mixers and quadrature networks are used for both the receiver and transmitter. The signal from the microphone is amplified and amplitude limited by a dual low noise op-amp. The audio signal is then switched through to the input of the audio quadrature network which generates the in-phase and quadrature signals which then drives the two balanced mixers.

The outputs of the two mixers at 116 MHz are then combined in a Wilkinson combiner (or splitter when considering the receive path), which then passes to the first mixer where it is up-converted to 144 MHz, filtered, amplified and passed through to the power amplifier stage. The PA stage amplifies the milliwatt level signal up to approximately three Watts. While this may seem QRP to the die-hard HF operator, three Watts can be remarkably useful at VHF and of course, is a useful level to drive an additional linear amplifier, if desired.

The 28 MHz variable frequency oscillator is based on "Direct Digital Synthesis" technology as this provides a very stable and (relatively) low noise local oscillator signal for the up/down-conversion process. Frequency selection is done using a small rotary shaft encoder and the current version of the software supports 1 kHz and 10 Hz step rates which are selected via a front panel switch. The tuning dial can also be locked to prevent inadvertent frequency changes. Two frequency memories are provided so that the transceiver can be quickly switched between favourite frequencies; the memories can be easily set from the main tuning dial.

Note that there is nothing special about the combination of frequencies used: 116 MHz and 28 MHz, as the choice was based on the fact that I had a 116 MHz crystal available. As the DDS output is usable to approximately 60 MHz, it would be possible to use other combinations of frequencies that would add up to 144 MHz. In fact, this might offer some benefits as the carrier suppression of the second mixers is likely to be better at lower frequencies so using 90 MHz and 54 MHz might be a viable way to increase carrier suppression.

As a microcontroller is required to operate the DDS chip, it was convenient to use it to control the other functions of the transceiver e.g. drive the Liquid Crystal Display, control the T/R switching, generate a "roger beep", provide frequency memories etc. An Atmel ATmega16 chip was used as this suited the existing DDS circuit board which has been used in a number of other projects.

Power to the various stages of the transceiver is supplied by linear regulators and a DC-DC convertor which generates the +/- 12 V DC supplies for the op-amps circuitry. Transmit-receive switching of the audio and radio frequency signals is done using miniature SMD latching relays which were obtained at low cost through surplus channels. Power is switched to several stages using larger chassis mounted relays.

During development of the transceiver it was found that stability was difficult to maintain due to the high gain employed in the various audio and RF stages. The solution was found to be the application of screening; extensive decoupling, earthing and switching off power to unneeded stages during receive and transmit. The end result is a radio that is stable and well behaved, with good sensitivity and signal handling capability.

In general, each section of the transceiver is built on its own printed circuit board, with interconnections made using miniature screened cable. This was done so that the various sections could be separately built and tested. The following sections describe each of the functional blocks in more detail. Note that component identification is local to each circuit board.

Modulation, demodulation and audio circuitry

Most of the signal processing - modulation and demodulation - takes place on a single circuit board (see Figure 2). The circuit is not as complex as it looks. This board holds the mixer diplexers, receive and transmit audio amplifiers. For clarity of function, connections to the audio band pass filter and quadrature network are shown.

So that the mixers are correctly terminated over a wide range of frequencies, LC diplexers (LI, L2 and associated components) are used to provide the correct impedance termination for both wanted and unwanted mixer outputs. The diplexer provides a useful amount of filtering which helps the final selectivity of the receiver. The inductors are wound on RM6 size ferrite cores, 135 turns of 0.25 mm wire was wound on the former and the adjustment screw was then adjusted so that the inductance was the same for each unit.

After the signal passes through the diplexer it is amplified by two low noise op-amps (in each channel) and additional filtering is provided by a RC low pass filter between amplifier stages. The two stages of amplification give approximately 60 dB of gain at audio frequencies. The I and Q amplifiers are identical so that the signals in both channels are treated the same. Any imbalance in either the gain or phase response of the channels will degrade the suppression of the unwanted sideband. Following amplification and filtering, the signal is passed to the audio quadrature board, the output of which is switched back through the signal processing board where it is combined and sent to the audio output amplifier PCB.

Final adjustment of the gain balance can be done using a trimmer potentiometer which acts as a summing junction for the I and Q channels. The combined signal is then passed to the audio power amplifier on another PCB.

When the transceiver is switched to transmit the direction of the signal flow changes and the board now acts as a modulator. Audio signals from the microphone are amplified and amplitude limited by two low noise amplifiers (U7 A &

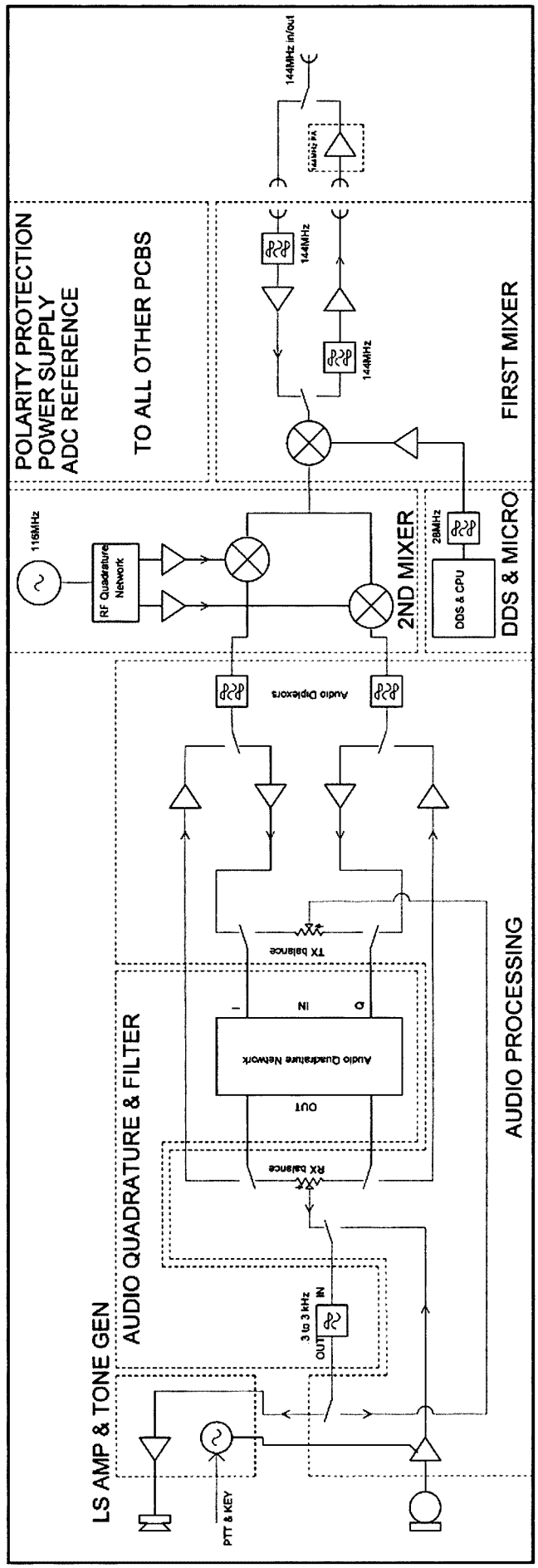


Figure 1: Block diagram. The dashed lines indicate the various modules that are built on separate printed circuit boards.

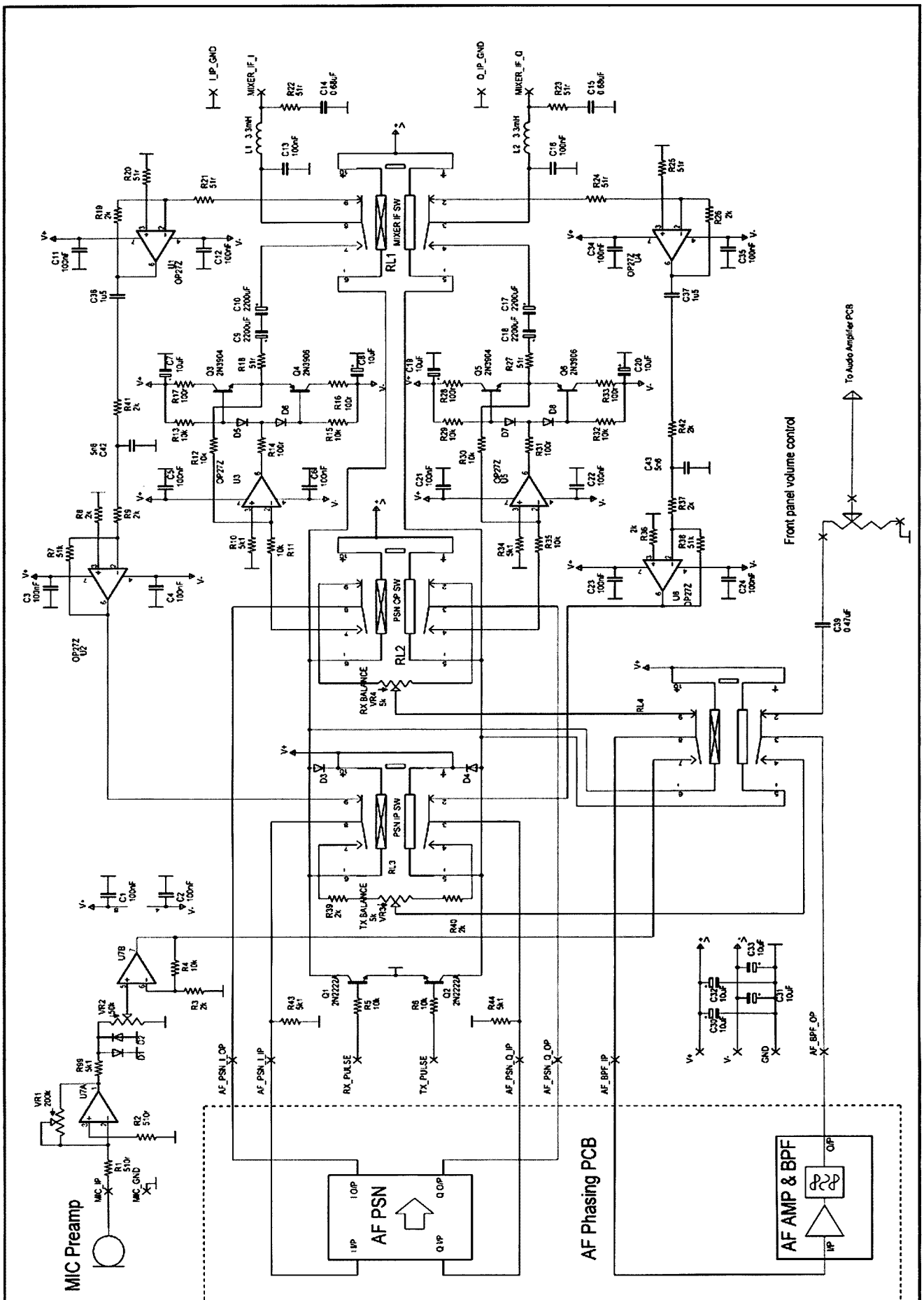


Figure 2: Audio proocessing board, showing interconnections to audio quadrature and filter board. While I used a dynamic miorophone, an eleotret type could be used by adding the appropriate bias resistor and DC blocking capacitor to the input of amplifier U7A.

B). They are then passed to the audio band pass filter and quadrature network which now operates in such a way to produce two audio channels (I and Q) in phase quadrature. The two channels are buffered by op-amp/transistor power amplifiers (U3, U6 and associated components) which drives the balanced mixers via the diplexers. Amplitude balance of the transmit path can be controlled by another trim pot.

The audio band-pass filter and quadrature networks (see Figure 3) are built around low-noise op-amps which are readily obtainable. The quadrature network uses cascaded op-amps in an "all-pass" filter configuration. As the amount of unwanted sideband suppression depends on the accuracy of the quadrature network a multi-stage design was chosen, the circuit was taken from Reference 1.

This results in a network that gives an accurate phase shift of 90 degrees over a frequency range of approximately 200 Hz to 4 kHz. Frequencies outside of that range are attenuated by a LC band pass filter. These stages contribute about 20 dB to the receiver gain. Overall receiver selectivity and transmission bandwidth is set by the response of the band pass filter; an LC filter was used as it resulted in a compact and high performance circuit.

Connections to and from the filter and quadrature network are configured so that they can be switched between receive and transmit modes, thus allowing the same circuits to be used for transmit and receive. This reduces the number of adjustments required at the expense of additional switching, but this was considered preferable to using separate networks for receive and transmit.

Note, that as the phase and amplitude response of the I and Q channels need to be well matched, 1% resistors and matched capacitors were used in the corresponding places of the signal path in both channels. Generally the absolute value of the components is not as critical as matching the values and the process

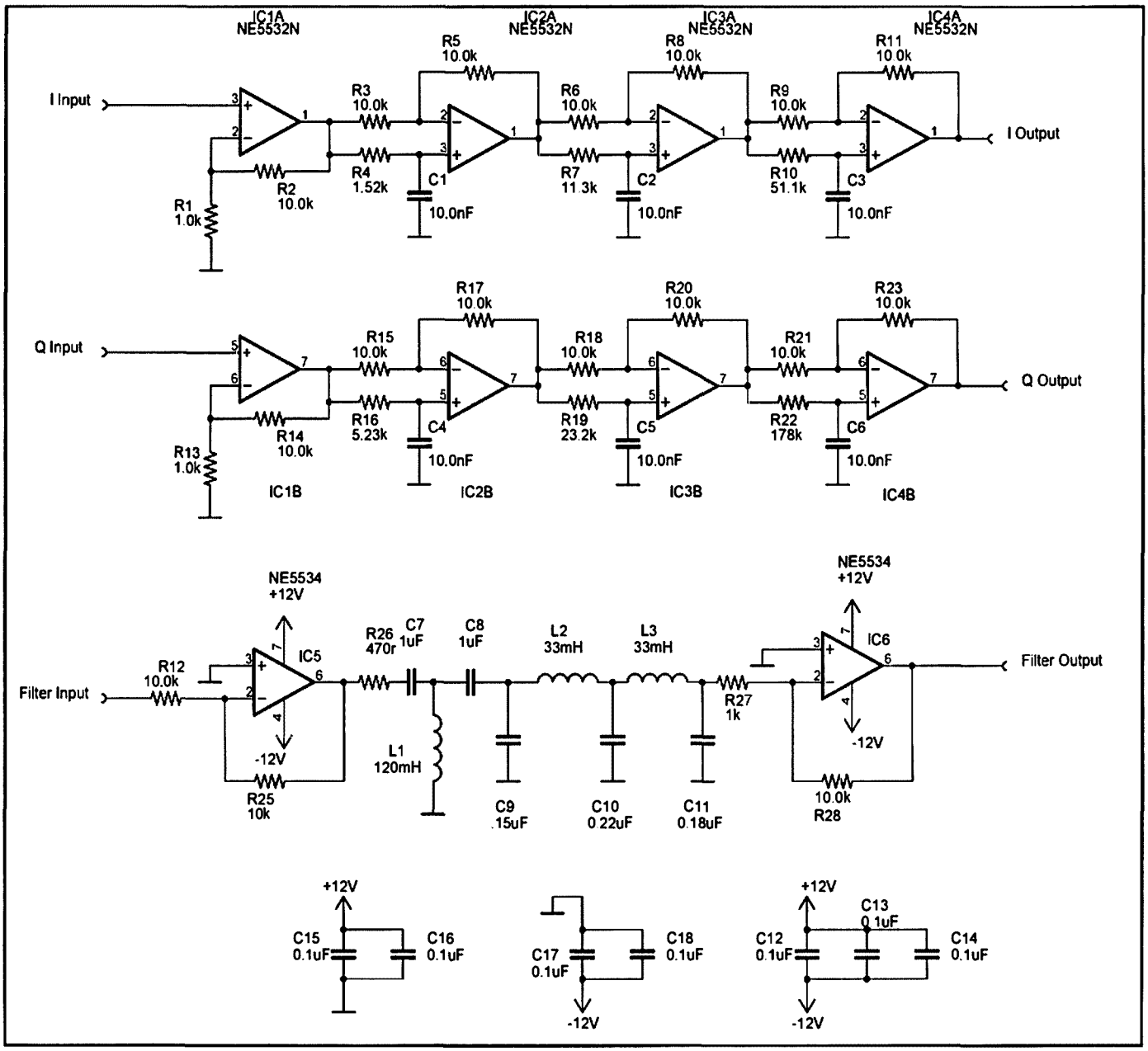


Figure 3: Audio band pass filter and quadrature network board. The connections to the I and Q inputs and outputs depends upon the mode of operation. The inductors are small PCB mounted units, see supplier information.

was simplified by purchasing 100 capacitors and selecting the values using a capacitance meter.

A small circuit board (see Figure 4) contains the loud speaker amplifier and tone generator. Originally the audio amplifier was mounted on the main PCB but it was impossible to make the receiver stable using such an arrangement; it was found that moving the audio PA to another board solved the problem.

The 'Twin-T' tone generator, switched on and off by the microcontroller; is used to generate the 'roger beep' signal as well as the Morse code signal when in CW mode. The tone signal is coupled to the loud speaker amplifier when in receive and to the second stage of the microphone amplifier when in transmit.

Radio frequency circuitry

The input signal passes through the main antenna changeover relay, then through a pair of rear panel miniature coaxial connectors. This was done to simplify connection to an external transverter. If this ability is not required, the pair of connectors and link cable can be ignored. (See Figure 5) The receiver signal is amplified using a MAR-8 MMIC.

These have a reputation for instability, however no problems were experienced in this design and the MAR-8 provides significant gain (30 dB) and a reasonable noise figure (3 dB). The input signal passes through a band pass filter made up of two toroidal inductors which are coupled by a small value capacitor. This band pass filter sets the RF bandwidth of the receiver and no problems with out-of-band signals have been experienced so far.

Following amplification, the signal passes through a relay and into the first mixer where the 144 MHz signal is mixed with a variable 28 MHz local oscillator (buffered by a MAR-4 MMIC) to produce a fixed frequency output at 116 MHz. The first mixer is a Mini-Circuits TUF-1 device which is available at low cost.

Another suitable mixer would be a TUF-2 or SBL-1 or similar, although the PCB layout would need to be changed to accommodate the different mixer package if the SBL-1 is used.

When in transmit mode the 116 MHz signal is 'up-converted' by the first mixer and switched through to a 144 MHz band pass filter and them amplified by two MAV-11 MMICs. These provide sufficient gain to develop several milliwatts at the output of the PCB which can be connected to either a transverter or to the local power amplifier stage.

To ensure stability, it was found necessary to switch DC power between the input and output amplifiers, otherwise there was a tendency toward oscillation due to the high gain and close proximity of the various RF amplifiers.

Transmit and receive signals at 116 MHz pass through the second mixer board (see Figure 6) where the process of direct conversion takes place. This board also contains the 116 MHz oscillator and RF quadrature network.

A conventional Colpitts JFET crystal oscillator and buffer amplifier drive a matching network (C9, C10 & L3) which matches the drain load of Q2 (~ 500 ohms) to the 50 ohm impedance required by the phase quadrature network. The MAV-11 MMICs have input and output impedances close to 50 ohms which matches the impedance required by the phasing network and second mixers.

Phasing networks come in all sorts of topologies. In this case a pair of eighth wave transmission lines and coupling capacitors provides two outputs with a quadrature phase relationship (see Figure 7).

Ideally the input power splits evenly between the two outputs and this seems to occur in practice. The two capacitors (C11 & C12) are required to have a capacitive reactance of 50 ohms at the wanted frequency, in this case 27.44 pF, so trimmer capacitors were used and adjusted to optimise the phase difference between the two outputs. Any amplitude difference can be later corrected by the amplitude trim adjustment on the audio processing board.

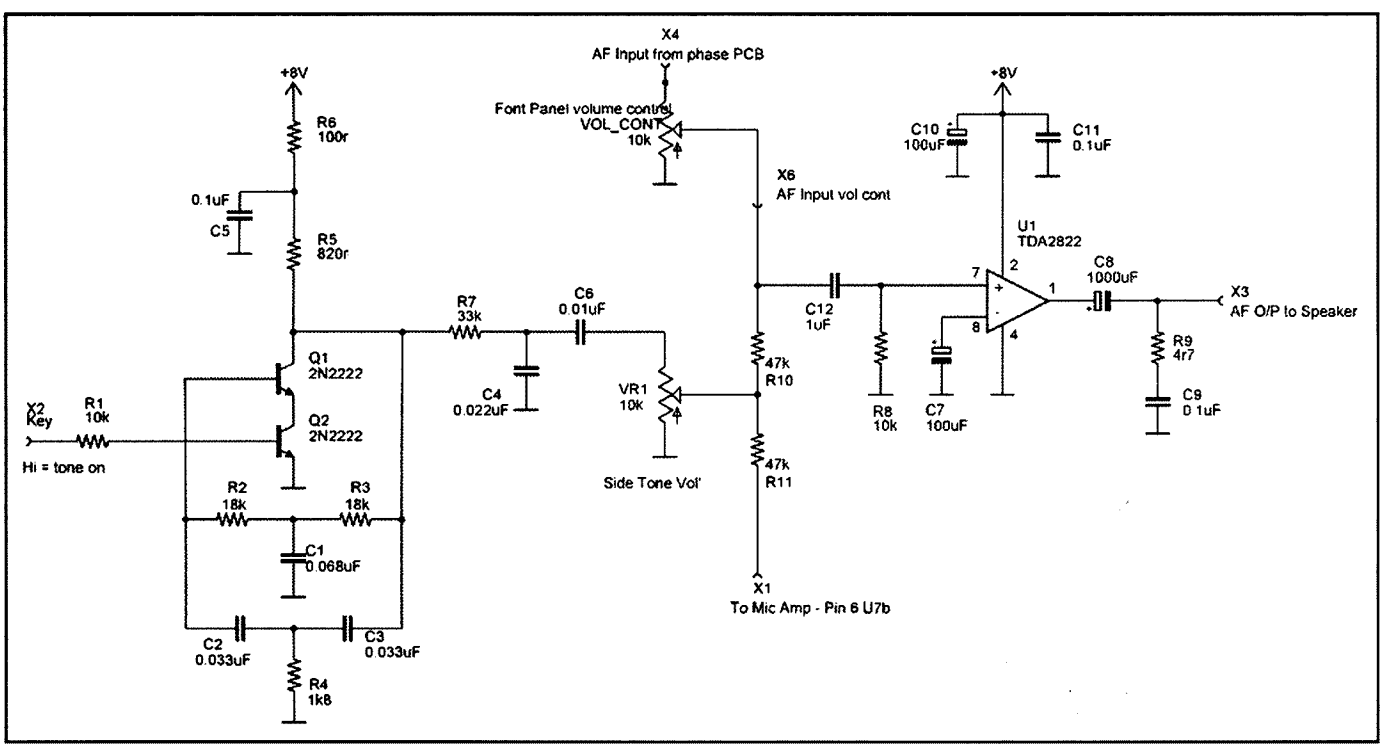


Figure 4: Loud speaker amplifier and tone generator.

The eighth wave lines are cut from a length of miniature coaxial cable (RG174 or similar, ideally Teflon insulation so that it can be soldered without melting the insulation) with an accurately known velocity factor.

It is very important to accurately know the velocity factor as the cable has to be cut to exactly one eighth of a cable wavelength at 116 MHz. In the prototype this amounted to a length of 210 mm based on a velocity factor of 0.651. Figure 8 shows the method I used to measure the velocity factor. Other methods could be used e.g. a grid dip oscillator or vector impedance meter etc, if this is more convenient. I used a signal generator to excite the cable and the frequency was adjusted until a sharp null was observed on the power meter (a suitable receiver could also be used). At this point the frequency was measured and the free space wavelength calculated. The length of the 'half-wave' section was measured and the velocity factor was calculated (remembering that the cable is *half* a wavelength long, therefore the length has to be multiplied by two) using:

$$\lambda_{fs} = \frac{C}{f} \qquad (1)$$

$$V_f = \frac{\lambda_c}{\lambda_{fs}} \qquad (2)$$

Where:

λ_{fs} = free space wavelength (m)
λ_c = cable wavelength (m)
f = excitation frequency (Hz)
C = speed of light (use 3 x 10^8 m/s)
V_f = ratio of phase velocity in cable vs. free space – always less than 1.

The eighth wavelength lines can now be cut from the coaxial cable. If this procedure is carried out carefully, the output from the quadrature network will have the accurate 90 degree phase difference required.

This process will work for any frequency so cable phasing networks can be built for any desired frequency,

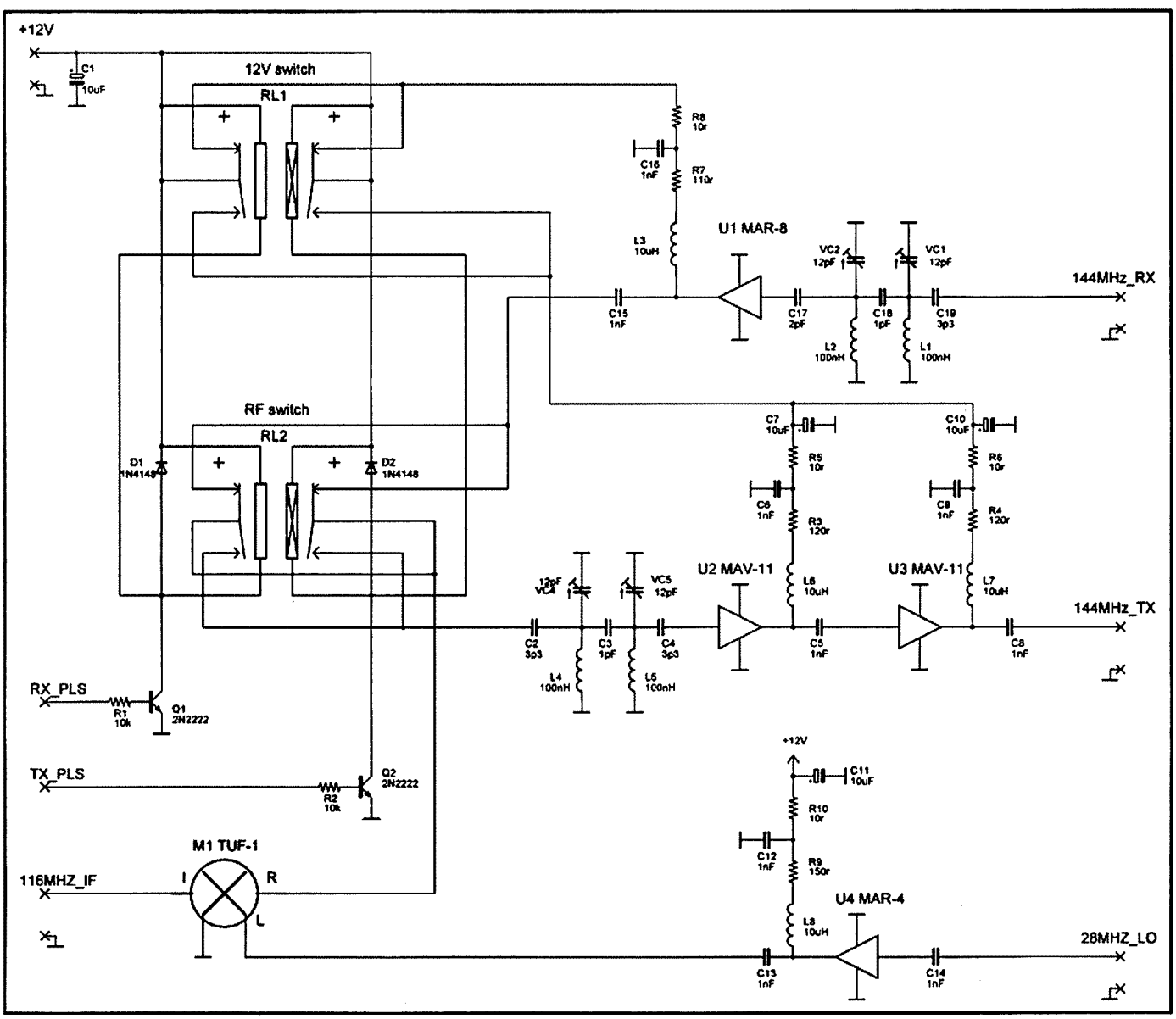


Figure 5: First mixer board. Inductors L1, L2, L3 and L4 are 6 turns on Amidon T37-12 cores. The MMIC output decoupling inductors are 10 uH SMD devices. Most of the other resistors and capacitors are also SMD components, although leaded varieties would work well, particularly if use at lower frequencies is intended.

remembering to change the capacitors so that they have a reactance of 50 ohms at the desired frequency.

The cable can be coiled up to save space without affecting performance of the phasing network.

After amplification by the two MAV-11 amplifiers, the two 116 MHz local oscillator signals are passed to the two mixers. TUF-2 mixers were used in this instance. Initial work was done with the more readily obtainable TUF-1 devices, but TUF-2 devices were obtained which improved the carrier suppression by several dB. However, TUF-1 devices would be very suitable for use at lower frequencies.

The signal at the final output frequency can be applied, at low level, to any suitable transverter, or it can be amplified for use at 144 MHz.

A three stage linear power amplifier provides enough gain to develop about 3 watts of output power, an overall power gain in excess of 30 dB (see Figure 9). This design was adapted from a circuit shown in Reference 3.

Following a double tuned circuit is a conventional feedback amplifier stage followed by two stages of power amplifiers. Both stages are impedance matched to the previous stages using either transformers or LC matching.

The final power amplifier bias is supplied by an emitter follower (Q4), the base input voltage of which is developed across two silicon diodes which are mounted, one each, on the bias generator and RF output transistor.

This ensures that the bias voltage is reduced as the amplifier heats up during use, thus avoiding thermal runaway. The

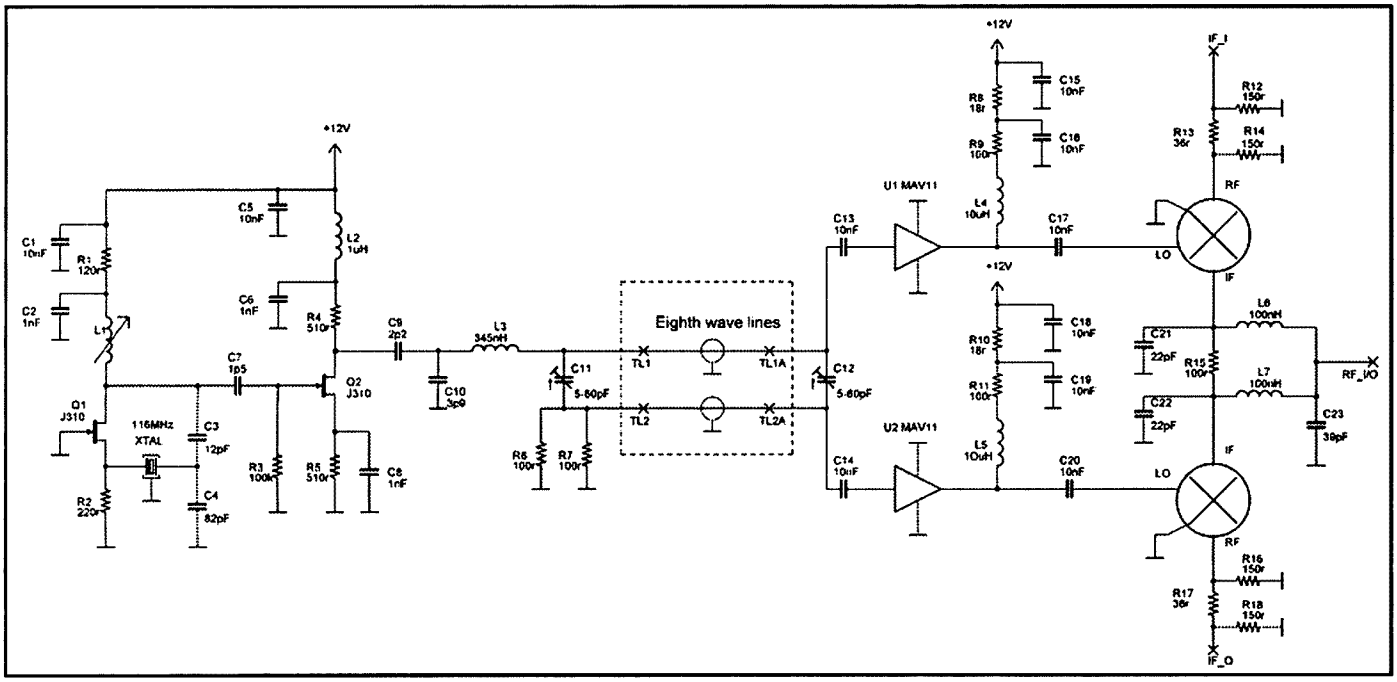


Figure 6: Second mixer and 116 MHz local oscillator board. L1 is a small moulded inductor with 5.5 turns and aluminium core – TOKO S18 green or equivalent. L3 is 15 turns wound on an Amidon T37-12 core (green-white). The other inductors are small SMD inductors. With the exception of L1, L3, Q1, Q2, XTAL, C11, C12, M1 and M2 all the components on this board are surface mount types.

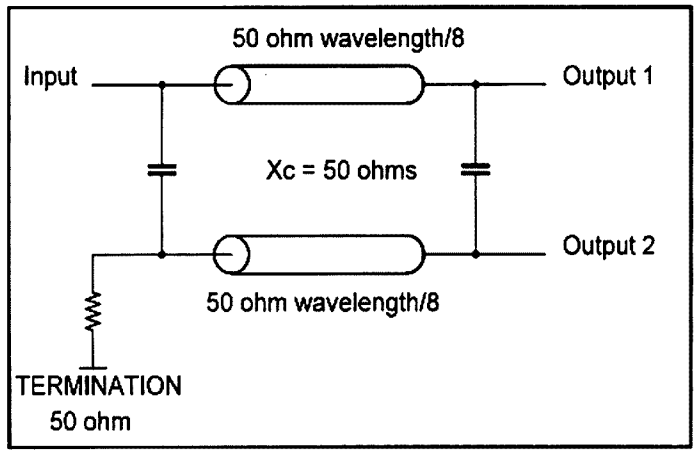


Figure 7: Eighth-wave quadrature network. Taken from Reference 2 which also gives a lumped component version for frequencies where coaxial cable is inconvenient. Reference 1 also has variations on the same theme, with cascaded versions offering quite wide bandwidths. In all cases the feed and termination impedance must be a close match to 50 ohms, or Z_0 if some other impedance is selected for the design.

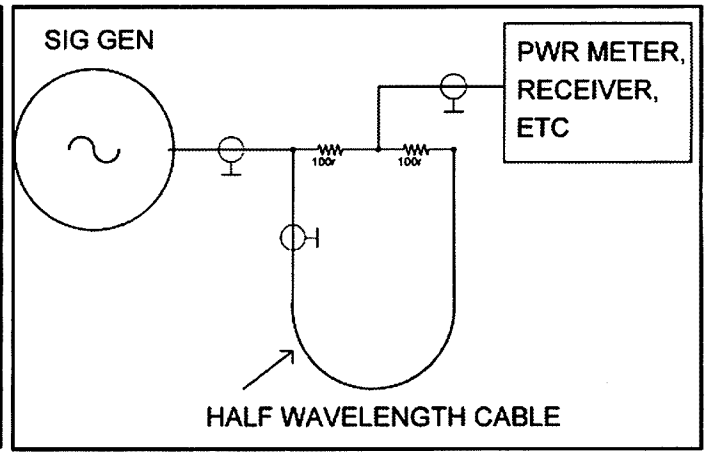


Figure 8: Method of measuring cable velocity factor. Accurate measurement of the excitation dip frequency and cable length is critical. The null should be quite sharp and deep. Incorrect measurement or calculations will impair the transceiver sideband suppression. The half wavelength can be any convenient frequency, and then the cable can be cut to the required eighth wavelength at 116 MHz.

quiescent current for the final amplifier stage is set by the trim pot R8 and the pot is set so that the quiescent current in Q3 is about 50 mA.

Power to the power amplifier is switched through the T/R relay controlled by the microcontroller and a rear panel toggle switch can disable the power amplifier when required.

This ends the first part of the article. The next instalment will describe the rest of the circuitry, construction and adjustment procedures.

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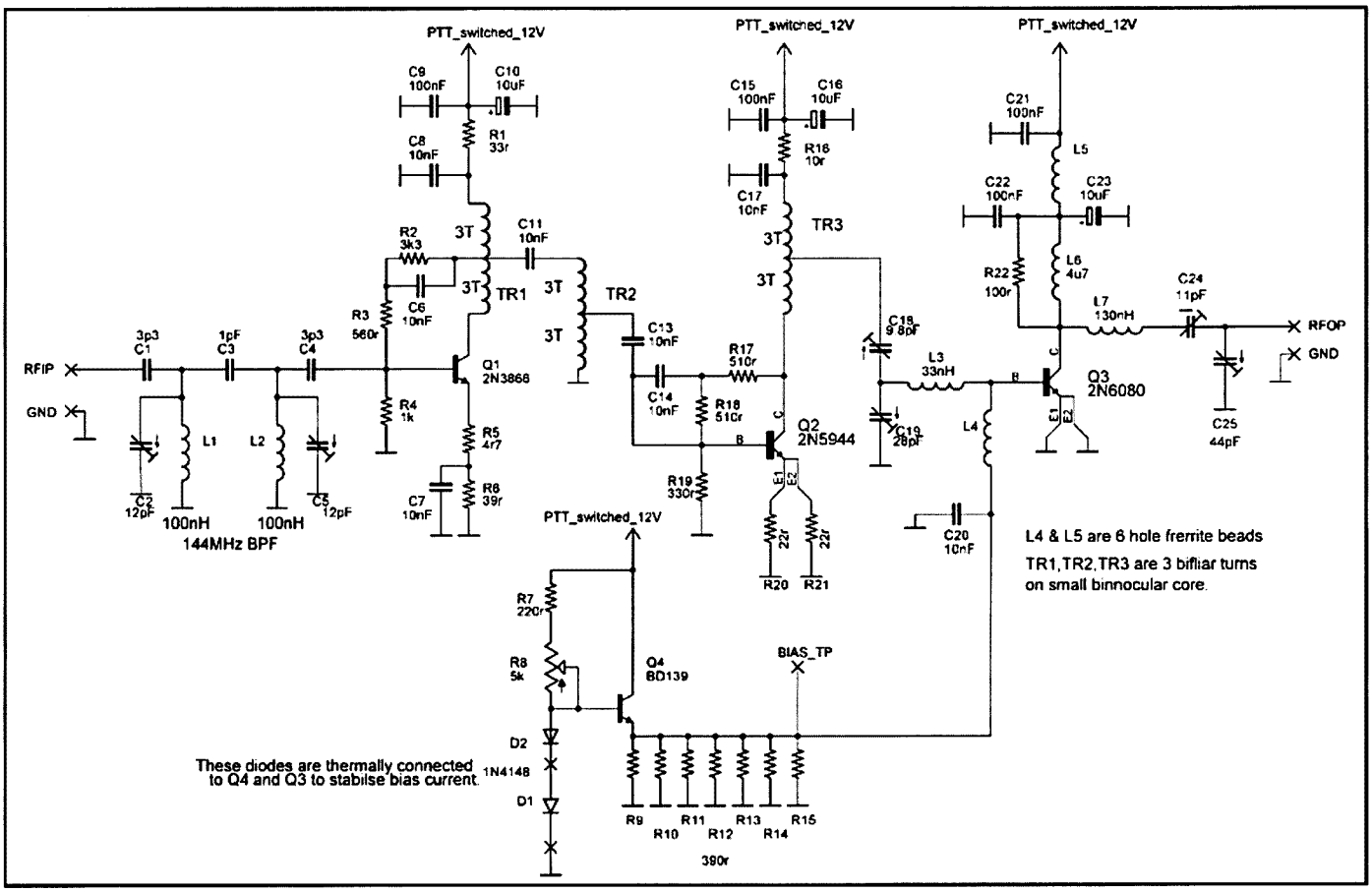


Figure 9: RF power amplifier. L1 and L2 are six turns on an Amidon T37-12 core. L3 is five turns on T37-12 core; L7 is eight turns on T50-12 core. Transformers TR1, TR2 and TR3 are three bifilar turns on small binocular ferrite cores (ex-equipment), L4 and L5 are chokes using six-hole ferrite beads (ex-equipment). Diodes D2 and D3 are glued to transistors Q3 and Q4 to ensure good thermal contact. The other passive components are a mixture of leaded and SMD parts. The values shown for the variable capacitors are the calculated values, so trimmer capacitors are used to allow adjustment to the correct value.

Silent Keys

Bernie Burgess VK4IB

I am sad to inform you of the passing of Bernie Burgess VK4IB on the 24th of June at Hervey Bay in Queensland after a long illness.

Bernie started life down here in VK7 and was known by many amateurs here in VK7 and will be sadly missed.

Vale Bernie.

Submitted by Kevin Burgess VK7BK

John Serino VK7UJ

I am sorry to tell of the death of John Serino VK7UJ following a period of poor health. He was 78 years old.

John was born in Italy and became interested in radio as a teenager, obtaining his amateur licence with the call I1UJ. Some years after moving to Australia, John passed the Australian exam and obtained the call VK7UJ. He was an enthusiastic Morse operator and after his first year as VK7UJ, he told me that he had talked to a 9 year old, a 90 year old and to someone sending Morse with his foot.

Vale John

Submitted by Richard Rogers VK7RO)

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ALARA

Aysha Venugopal VK5FASH

Two rare, faraway events

In a month's time, the YLs of Scandinavian Young Ladies Radio Amateurs (SYLRA) are going to embark on a rare polar DXpedition to Svalbard. SYLRA is hosting this rare treat due to popular demand of the YLs as a finale to the SYLRA 2009 meet at Kolbotn near Oslo (Norway) from 3-6 September 2009. The special call sign for the meeting at Kolbotn is LA1SYL.

For all the intrepid and interested amateurs who will be attending the SYLRA, Svalbard is a rare DX as it is the northernmost part of Europe. The polar expedition to Svalbard will begin on 7 September after the meeting has ended.

For all those keen amateurs waiting to get through to this DX, this is a rare opportunity as the last expedition to this site was the Polar YL meeting 1998 at Longyearbyen, Svalbard. (This is the northernmost town of over 1000 residents in the world, being 12^0 north of the Arctic Circle-Ed) Over the last 10 years, the accommodation and facilities in Longyearbyen have changed and the 2009 expedition promises to be a great opportunity.

The special call sign for the Svalbard expedition is JW1SYL and the YLs are going to be active from 3 am on 7 September till 11 September 2009. So for all those desperate for a QSL card from JW land, this is an opportunity not to be missed. The YLs will be on the radio round the clock.

Any amateurs participating in this DXpedition who wish to use their own call sign must provide their own QSL cards and bring their own log. The call sign that one can use would be JW/... and their own call sign. Good luck to those going on the DXpedition and those wanting to confirm JW in their logs.

The British Young Ladies Amateur Radio Association (BYLARA) is organizing a National Hamfest to celebrate its 30th Pearl Birthday Bash. The Hamfest is being organized on 2-3 October 2009 at the Newark Showground, UK. Amateurs can find themselves a good bargain or just bring and buy. For more information about the event, look up **www.nationalhamfest.org.uk**

Contests

It is contest time in August with the two big ones – Remembrance Day and ALARA – ready to keep the YLs busy on the air. Keep the radio gear tuned and refresh yourselves with the rules and log books for these contests if you want to win something or just enjoy yourselves with a bonanza of active contacts.

The Remembrance Day contest is the first big one and happens on the 15th and 16th August 2009. It is a 24-hour contest beginning at 0800 UTC Saturday and ending at 0759 UTC Sunday. Amateurs in VK, ZL and P29 areas try to notch up contacts in areas other than their home base. The contest is across all bands (except WARC). Recently, the contest has seen a number of enthusiastic F calls participating in the contest. This year, there is a new "receiving only" category for any licensed stations.

For any keen contester, keeping the logbook is a must, be it manual or electronic. Of course, electronic logging software (details in the July issue) has advantages over a manual one, especially when it comes to alerts about duplicate contacts on the same band within the two-hour time bar.

However, a manual logbook can also be submitted. You either buy a logbook from your local radio club or the WIA or just make up your own sheet with the rows for contacts and columns for date, time, band, other call sign, your signal and number, other signal and number and name of operator.

Full rules on page 42.

The ALARA contest and the ALARA award

For the YLs, the ALARA contest is a special time. The contest is held on the last full weekend of August and this year, it falls on Saturday 29th and Sunday 30th of August 2009.

The contest runs for 36 hours beginning on Saturday at 0600 hours and continues till 1159 UTC on Sunday. This gives a chance for members to use the two evening sessions to make contacts on the 80-metre band.

As there are not many ALARA members, they are allowed to make repeat contacts after every hour. In the contest, YLs get to work everyone while clubs & OMs work YLs only

There is a special prize for those who

make a note of every ALARA member contacted as they fetch top points in the final tally. What is better is that they can also get you a coveted ALARA award to decorate your shacks. The certificate costs only $5 or four IRC or International Reply coupons that can be bought at a post office. For VK and ZL call signs to qualify for an ALARA award, all you need to do is get 10 contacts from ALARA members from at least four call areas. As a DX amateur, you will need only contacts with five ALARA members from three call areas to qualify.

To claim your certificate, all you need to do is write out your list of contacts including details of date, time, band used and signal reports exchanged. The contact details along with the payment and your own address has to be sent to Kathy Gluyas VK3XBA using the call book or emailed to her at *kathyg@spacelink.com.au* She will print out the certificates, have it signed by the president and will mail to you. It is as simple as that and it is a great way to keep those contacts and certificates coming in.

Full ALARA Contest Details
on page 42 or at
www.alara.org.au

Happy Birthday ALARA

It was ALARA's 34th birthday at the end of July and clubs organized their own birthday luncheons to celebrate. An on-air party was held on the 80-metre band on 25th July 2009 with the annual Birthday Net from 1000 to 1200 UTC. Hope you all had a wonderful time and there will be more about the birthday lunches in the next issue.

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(Standing from left) ALARA members Myrna VK5YW, Jeanne VK5JQ, and Christine VK5CTY, with (sitting from left) Christine's granddaughter Bianca, her friend Donna and Jeanne's daughter Erica, Meg VK5YG and Jenny VK5FJAYat the ALARA monthly meeting in Adelaide.



Amateur radio 1948

John K Carter

Just after the war, and before all the UK troops had been withdrawn, I was stationed in Padua, North Italy and was at the time the Wireless Officer at GHQ Central Mediterranean Forces.

Under an arrangement between the UK Postmaster General and the War Office, the Chief Signals Officer of a theatre of operations could issue a licence to a suitably qualified person to open and operate an amateur radio station, operating under the rules for such stations.

The call sign was issued to the station, not the authorised operator. Our station had the unusual call sign XAEK. There was another similar station, whose call sign I do not recall, operating in the Middle East Command.

The equipment was, for the main part, available military equipment not required for service use. The PA was built from service spares no longer needed, the output valve being an Eimac 100TH, grid modulated. The exciter stage was a Type 10 transmitter. For a receiver we used an RCA AR77. Next to the receiver was the mandatory frequency meter, a Bendix BC221, as I recall. For antennas we used '8JK' beams.



The author at the controls of station XAEK, circa 1948.

Regrettably I could not bring the station log with me, as it had to remain with the station for the next duly authorised operator. Some of the call signs I can recall working were VK4VD in Rockhampton, W6VTO fixed portable CI in Shanghai China and LU6AJ in Argentina.

After the War, I retained my interest in amateur radio with a call sign G3EBM, followed by VK2APO and VK5LA. Residential restrictions prevented me operating in West Australia until recently, and I am now in the process of renewing my licence for a VK6 call.

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Telegraph codes in Australia

John Alcorn VK2JWA

With a background of different Crown Colonies federating into one nation it is not surprising that Australia's communications history has some oddities. Every Australian schoolchild knows of the different railway gauges, but different varieties of what is generally known as Morse Code?

IN 1853 an Irish-Canadian by the name of Samuel McGowan came to Melbourne with some telegraph equipment. He intended to operate a telegraph company between Melbourne and the gold diggings.

The State of Victoria then constructed the first telegraph line from Melbourne to Williamstown in 1853. The contract was won by McGowan, opening in March 1854. His operators, of course, used the American Morse Code. They handled 4000 telegrams in the first year, mostly shipping information.

Tasmania constructed a line from Hobart to Launceston in 1857, connecting by undersea cable to Melbourne in 1859. Sydney, Melbourne and Adelaide were linked by Morse in 1858.

American Morse was adopted in the eastern Australian States, and from 1862 this was also adopted in New Zealand as 'Victorian Code'.

Brisbane was connected to Sydney in 1861, and their lines extended northward.

When the Overland Telegraph line from Port Augusta, South Australia, to Darwin was opened in 1872, American immigrant operators got the job, and used American Morse.

However in 1874 Victoria adopted its own version of the Code eliminating the spaced characters C O R : ; . but retaining Y Z &.

Why? Who knows? This was known as the Victorian Code.

In Western Australia the Telegraph was constructed and operated by the West Australian Telegraph Co. in 1869 using their own WATCo Code, which was different from the others.

South Australia and Western Australia were linked across the Nullarbor Plain by 1877. By the way, 'Nullarbor' is not an Aboriginal word, but a corruption from Latin 'null arbor' which translates to 'no trees'. They met at Eucla, a small coastal settlement 12 km from the WA-SA border, inside WA.

Eucla Telegraph Station became a very unusual office, operating with up to 70 staff.

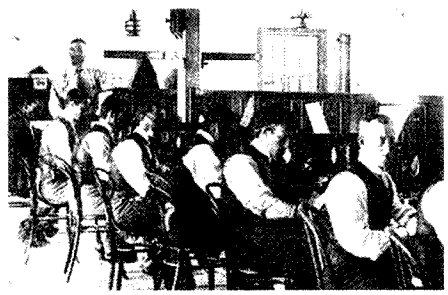
Basically it was a long building divided by a wall up the centre, with operating benches on each side and with windows or pigeon holes between. WA operators sat on one side and SA operators on the other.

WA traffic in WATCo Code was received, written out and passed to SA operators who sent it on in Morse (or Victorian) Code. I do not know if any other states adopted Victorian Code. The reverse happened to traffic the other way.

The transcription service ended after 1897 and Eucla Telegraph Station closed in 1927.

The webpage for the Eucla Telegraph Station can be found at http://members.iinet.net.au/~oseagram/eucla.html

The Intercolonial Postal and Telegraph Conference in Sydney in November, 1896 decided that the International Code would be adopted by 1 July 1897. Operators had about three months or so to learn the changeover. This happened,



Telegraphists at Eucla – on one side of the dividing wall.

Victoria doing so on 1 August 1897. The rest is history.

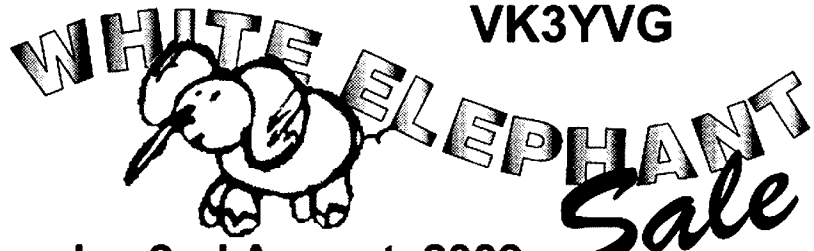
The longest direct telegraph line constructed in Australia was 3220 km (2000 miles) from Perth to Wyndham, WA.

Morse telegraphy was last used in Australia between Roebourne and Wittenoom Gorge in the north-west of Western Australia, on 5 November 1968. The traditional telegram service ceased in 1989. Now 'telegrams' are sent as specialist services by authorities by other means, or by Morse enthusiast groups using code.

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ARK's Academy

John Fisher VK3ARK

Approximately a year ago a small group of Melbourne amateurs began to consider what they could contribute to the hobby in the area of education.

Introducing ARK's Academy

The action to examine education resources came about due to a lack of upgrade courses being offered and also some concerns with regards to the costs involved and the increases in the WIA/ ACMA fees.

It was decided to form an organization that would offer courses free of charge, thus ARK's Academy was born.

With the generous support offered by the Sherbrooke Community Radio Club, which is based at the School in Sassafrass, planning started to run a couple of Foundation courses initially as a trial for a number of students and staff at the school but growing to include any person wishing to attend.

The rest is history. With a number of Foundation courses behind us and our very successful Regulations course where all seventeen candidates passed their exams, and one candidate, who decided on the spur of the moment to try, passed his Standard theory exam, we have gone from strength to strength and our upcoming Standard theory exam is fully subscribed with over twenty five candidates registered to attend.

All courses are free and there is no obligation to join any radio club as a requirement to participate (we do however pass around the hat for tea, coffee and snacks). Courses are conducted in our modern well equipped classroom.

At about Christmas time classes will move into a new purpose built auditorium that is being constructed and this will also be the venue for our regular Sunday Technical Seminars which will be followed by lunch and an opportunity to use the facilities in the SCRC's well equipped radio shack.

ARK's Academy Instructor Lino VK3BAD has done a fantastic job in developing new training material for ARK's Academy. Lino is ably supported by course instructors Ivy VK3IVY, Hannah VK3GNU, Jim VK3AMN, and John VK3JRB, and we invite any amateur who would like to join us in helping others enter the hobby to contact



James VK3FJAM, Monique VK3FPWZ and Callum VK3FSDP attended ARK's Academy to get their Foundation licences.

me John vk3ark@wia.org.au Note that you must be able to obtain a Working with Children card, but we can help with this paperwork.

Our next Foundation course will be conducted over the weekend of 5th and 6th of September at Sassafras.

Courses planned for 2010 include five Foundation courses starting in March, a Regulations course, a Standard theory course and new for 2010 we will offer an Advanced theory module to compliment our Standard theory course. Dates of courses will be published on VKHAM.

Best 73 John Fisher
VK3ARK/VK3DQ/M0GJF
VK3ARK@wia.org.au
VK3DQ@wia.org.au

ar



Candidates came from far and wide for the regulations course with Peter VK3FBEN travelling from Shepparton to Melbourne to attend.

Get on the Air

Some great contests and events coming up

Remembrance Day Contest

15/16 August
"Call for your State"

ILLW Event

15/16 August
"Great Contacts Great Sites"

ALARA Contest

29/30 August
"Meet many YLs"

Westlakes Cup

19 September
"Super Sprint"

All Contest details page 41

TET-EMTRON

Antenna Manufacturers

New Tet-Emtron Vertical Range

- **All Aluminium with Stainless steel hardware.**
- **No adjustment needed to main antenna.**
- **Light.**
- **Free standing—no intrusive guy wires.**
- **1 kW PEP power rating.**
- **Can be ground mounted or elevated.**

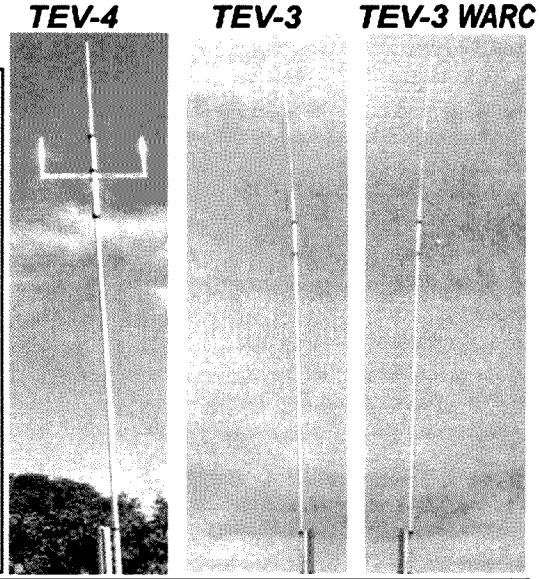
The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

New

Tet-Emtron Vertical Range

TEV-4 TEV-3 TEV-3 WARC



Antenna	TEV-4	TEV-3	TEV-3 WARC
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

40 Blackburn Street
STRATFORD
Victoria 3862 AUSTRALIA

Ph: 61 3 5145 6179
Fax: 61 3 5145 6821
ABN: 87404541761

www.tet-emtron.com
Email: rawmar@hotkey.net.au

Echoes of Apollo - EME on three milliwatts!

Rex Moncur VK7MO and Justin Giles-Clark VK7TW



June 27 2009 was designated World Moon Bounce Day as an amateur radio contribution to the celebrations of the 40th anniversary of man's first landing on the moon. The event was organized by a US group of amateurs who had access to the Stanford University 45 metre dish and they sought the involvement of some of the larger radio astronomy dishes around the world.

A key objective was to involve and interest school children in science and amateur radio by allowing children to hear voices from the moon. The event was supplemented by amateur Earth Moon Earth (EME) stations all around the world and particularly those with SSB capability on 23 cm.

Within Australia, the University of Tasmania (UTAS) agreed to take part using their 26 metre dish. Originally used by NASA in the Orroral Valley near Canberra between 1964-1985 it was gifted to the University and transported to Mt Pleasant, near Richmond in southern Tasmania (See cover picture).

Our involvement was to provide amateur EME equipment, help set up and test the system and operate the station on the day. As it eventuated the availability of large dishes provided the opportunity to explore QRP EME at as low a level as possible and we are pleased to report completion of a JT65 EME contact between the University of Tasmania's 26 metre dish and a Dutch 25 metre dish, PI9CAM, with the Tasmanian end running only three milliwatts.

Setting up the University of Tasmania dish

Dr Jim Lovell, of the University of Tasmania (UTAS), willingly offered the UTAS dish and the support of the site technician Eric Baynes (VK7BB), but it was first necessary to consider what was practical.

At our first meeting it became clear that transmitting any sort of high power as required for SSB would be out of the question as the dish is fitted with five extremely sensitive liquid helium cooled receivers working from 4 to 22 GHz (Figure 2).

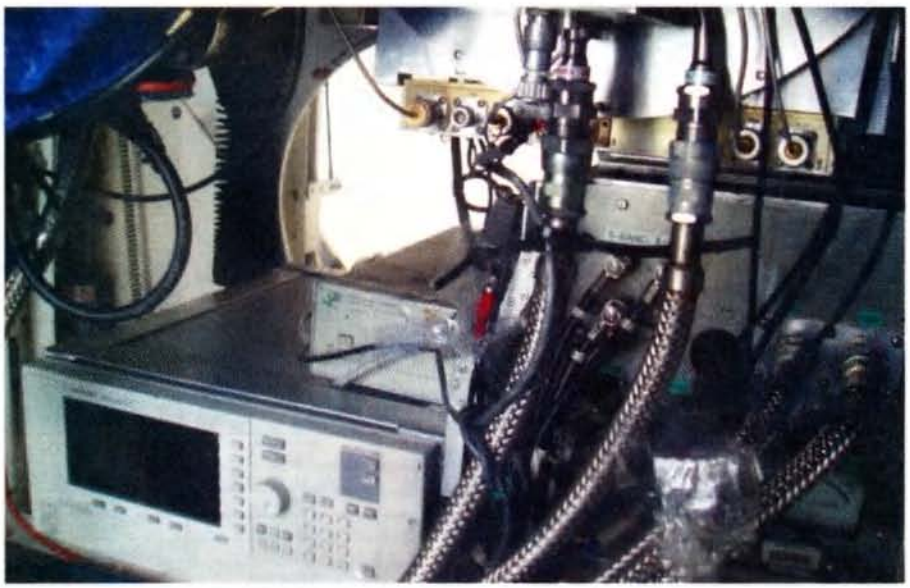


Figure 2: Liquid helium cooled receivers.

There is no protection for RF and we could not risk damage to these receivers which are involved in ongoing international research programs. Accordingly, the Echoes of Apollo team were advised that we would contribute to the event but as a receive station only.

The feeds and receivers for the 26 metre dish are mounted in a small feed cabin (a cube approximately two metres per side) behind a Teflon window about one metre in diameter. In the cabin there is a remotely controlled three axis focus frame that allows the feeds and receivers to be moved into the correct focal position depending on which feed is in use. There is space for a two GHz non-cooled feed and receiver which fortunately was not required around the time of the Echoes of Apollo event. The University agreed that this be removed and replaced with a 23 cm antenna. Because of space limitations it was decided to use a small three turn helical.

As there is over 100 metres of LDF-4-50 coax between the dish and the control building where we could operate we decided to down-convert at the feed and receive on 144 MHz. Eric constructed a down-converter and the VK7MO EME station provided pre-amplifiers, 144 MHz receiver, GPS frequency reference, computer running WSJT and bandpass filters at 1296 MHz and 144 MHz to limit interference from microwave systems at the nearby Hobart airport.

Prior to the event tests were conducted with Dave VK2JDS, with JT65c signal levels much worse than expected at -9 dB and no prospect of copying SSB. A sun noise test gave around 18 dB compared to 27 to 28 dB determined with the VK3UM EME calculator.

The time for testing was limited as this is an operational radio astronomy

research facility but the system was gradually refined with additional pre-amps and filters and through adjusting levels at all stages – as well as resolving the occasional "Murphy" problem.

Finally we decided that the helical feed must be the remaining limitation and did some estimates to see if a Septum feed and choke ring could be physically mounted. Initially it fouled other equipment but after a redesign of the mount it was successfully installed. In the end we achieved a sun noise of 25 dB which was within a few dB of what could be expected. Every time the system needed adjustment Eric had to don a safety harness and go up in a cherry picker (Figure 3).

Tests were now conducted with Doug VK3UM, who runs 400 watts and an 8.6 metre dish. Doug's SSB came through at 5/6, sufficient to be heard in a room filled with children – so with just four days to go we reported to the "Echoes of Apollo" team we were ready to go.

Could we transmit QRP?

With the RX side resolved our minds turned to the possibility of transmitting QRP at a few tens of milliwatts to avoid any possibility of damaging the radio astronomy receivers.

A quick calculation suggested that we should be able to work the 25 metre Dutch station PI9CAM at less than 10 milliwatts using JT65 and after an email, Jan PA3FXB told us they would be delighted to try JT65 at 10 milliwatts. While we did not have time to test the system until the day of the event, WSJT echo testing on the day gave a signal level of -31 dB at 10 milliwatts and this was improved to -27.8 dB by careful adjustment of the focus of the feed.

The day of the Event

Because of uncertainty about working the Stanford group with SSB at an adequate level for a room full of children the university decided not to actively advertise the event to the public but agreed that we could advertise on the VK7WI broadcast for amateurs to come along with children and friends. Our first reception was from Doug VK3UM at 5/7 who we worded up by telephone to talk to the children. It was a joy to see the smiles when they heard their names off the moon. While as amateurs we could copy Dave VK2JDS on SSB at 5/2, it was not quite strong enough for the children to resolve the voice, but using JT65 messages, Dave produced a great reaction from the children who photographed their names coming back from the moon. (see table below.)

The Stanford group was received at around 5/7 for a short period but then had to remove their feed to repair a pre-amp. Later we had various children and the media visit and arranged for Doug VK3UM to be the voice from the moon with great effect.

As the European window opened we could copy Dan HB9Q on his 15 metre dish calling CQ on JT65c at -1 dB. The university technician agreed we could up power to 30 milliwatts and Dan responded to our call giving us a -23 dB report. Power was then reduced to 10 milliwatts and with some effort we again completed with Dan at -29 dB. It is noted that given the 18 dB isolation of the Septum feed we did not need to use a TX relay as 18 dB down on even 30 milliwatts is quite safe for a low noise pre-amp.

Continued with photographs on inside back cover

JT65 message pro forma print out of names that went to the moon

TIME	SYNC	dB	DT	DF	W	Decoded Text		
082700	7	-10	0.2	38	10 *	HI JESSICA	1	0
082800	8	8	0.1	30	11 *	HI NICOLE	1	0
082900	9	-9	0.2	19	11 *	MOON ECHOS	1	0
083000	6	-9	0.3	8	10 *	MOON ECHOS	1	0
083100	9	-7	-0.3	-5	10 *	HAVE FUN	1	0



Figure 3: Access to the feed cabin is by cherry picker.



Figure 4: Control room view.

An echo of 'Echoes of Apollo': the 'SSB Fun event'

Doug McArthur VK3UM

There was considerable excitement in the early stages of the planning of the 40th anniversary of the landing on the Moon with the possible activation of Honeysuckle Creek, Parkes and other notable installations.

The weekend of 26/28 June was originally chosen (it was a month earlier than the Apollo 11 landing) to allow the Honeysuckle Creek dish to acquire the Moon. It is mechanically limited to elevations above 25 degrees and thus a weekend of low declination (Moon high in the Southern sky) was chosen.

As the time approached it appeared that many of the plans were not going to happen so, as a supplementary activity, I put it to the EME fraternity that we stage a *SSB Fun Net* to concentrate as much activity as we could muster and to support the event. It was hoped that children and other interested parties would be attracted to several of the larger stations and the exercise would foster science and technology.

23 cm was chosen as this is where there is the most activity of SSB stations capable of communicating via EME. The idea quickly became a reality and support was received from all quarters of the EME fraternity.

We agreed to use 1296.025 MHz as our net frequency and chose windows that would maximize the time available via the Moon for each of North America (NA) to Oceania (OC), Oceania to Europe (EU) and Europe to North America paths.

It was also agreed that I (VK3UM) would act as net control for the NA > OC and OC > EU windows and Joe (K1RQG) would handle the EU > NA window. The main mode was to be SSB but smaller stations were encouraged to call on CW.

The activity was conducted on June 26, 27 and 28 and provided three windows on each day. The times worked out quite well and nobody needed to get up in the middle of the night as they fell in the late morning and early evenings.

A slight negative was that the Moon's declination was lower than the Northern Hemisphere operators would prefer and varied from +13 degrees on the Friday to -1 on the Sunday. In the Southern Hemisphere we had a 'rare' chance to work EME with the Moon a lot higher in the sky but many Northerners found trees and other obstacles hindering their path.

It was a resounding success! I had over 60 SSB QSOs via the Moon during the activity periods, something even 10 years ago would have been just a dream. The smallest station I worked (all totally random and only two were 'CW support' calls) was a 2.5 metre dish and 50 watts. I am running an 8.6 metre dish and 500 watts at the feed. (ACMA 750 watt high power permit for 23 cm).

..(only) 2% of the power leaving your antenna actually hits the Moon, only 6.5% of that power is reflected and then 98% of that is lost getting back... (but) I had a three-quarter hour chat with HB9MOON where there were many school children...

I have deliberately under illuminated my dish providing a 15 dB edge taper to gain a lower noise temperature (technical stuff that would take a lot to explain!). Simply put, it hears darn well!

The individual stations worked (most with relative ease at Q5 up to S8) are listed below. The ARRL issued special call signs for the event as can be seen below.

W5HN, W5LUA, N6NB, AA6EG, K2DH, WI0, (K6MYC was first heard operating the Stanford dish before handing over to other members of the team). F2TU, OZ4MM, OZ6OL, JA4BLC, VK2JDS, G3LTF, VK5MC and SV3AAF, SP6JLW, HB9MOON, OH4DG, SM6FHZ, HB9US, HB9RJG, F2TU, LX1DB, G3LTF (again through his trees) and G4CCH, SV3AAF, WI0, N0O, JA8ERE, W7BBM, VE3KRP, W5J, SP6JLW, OH2DG, SM6FHZ, HB9US, HB9RJG, LX1DB, G4CCH, W1M, VE6TA, KD5FDX, K0C, RK3WWF, ES5PC and DF9QX.

Many of the above stations were worked each day and multiple way QSOs were had, which in itself was a challenge to net and track the Doppler shift.

I had a three-quarter hour chat with HB9MOON where there were many school children and amateurs present including the youngest YL in HB.

No we do not have any crocodiles at VK3UM, only koalas, kangaroos, wombats (free to a good home), echidnas and snakes (though I did not tell them that!). It was a fascinating chat and you could tell how excited the children were and how obsessed they are with our 'snappy handbags'. We later learnt they also had TV coverage and all manner of dignitaries on site.

Rex VK7MO kept up our side of the promotion by using the University of Tasmania 26 metre dish at Mt Pleasant, as reported elsewhere in AR. I greeted all the children present by their names (he told me via the phone; I am not that good!!). Rex tells me they were *'over the Moon'* in hearing their names called off the Moon over a path of 750,000 km at the time. Later we did a similar chat when a TV crew were present at the Mt Pleasant site.

I did not get the chance to chat with the Apollo 8 astronaut (Bill Anders), as the Stanford dish only came on once (on Friday) and did not appear in our other common windows.

Well after all this I was quite talked out, this SSB caper is just too much hard work, long may CW reign!

It really was a fun weekend and provided the promotional opportunity for one unique facet of our hobby.

It also served as a reminder of the brave pioneers that set foot on the Earth's distant Moon.

Continued with photographs on inside back cover

A case of simpler being better (and easier)

Felix Scerri VK4FUQ

A failed mast leads to a re-think on all sorts of 'simpler is better' solutions.

I like wire antennas, having built quite a few different types over the years. For 20 m use and general short wave listening duties I use a single one wavelength Quad Loop. For 40 and 80 m I use dedicated inverted V dipole antennas, all antennas being fed with balanced feeder as tuned lines.

Accompanying the arrival of our northern 'Wet Season', a period of severe weather saw my 12.5 m pipe mast fail after a night of sustained heavy winds. Seeing this pipe mast bent into two was not a pleasant way to start the day.

The mast held up my 40 m inverted V dipole. A shorter, 8 m replacement pipe mast was quickly assembled that afternoon and the 40 m inverted V dipole was placed back into service. I was gratified to note practically identical signal reports compared to the previous situation with the higher 12.5 m mast.

However after losing the mast I was keen to make a few changes, and, based on my success with my Quad Loop on 20 m, I decided to try and erect a one wavelength Delta Loop in place of the inverted V dipole for 40 m. Wire was purchased and a wire Delta Loop for 40 m was assembled and I commenced to place it on the replacement mast, configured as a triangle with the apex up. I was concerned about the possible reduced 'effective height' of the Delta Loop in this guise, but I thought its performance would be better than the inverted V dipole in any case.

After putting it up, which was done with only a moderate difficulty, I attempted to 'cut' the loop to exact resonance using a dip oscillator. This was where I struck initial trouble. No matter what I did I could find no 'dip', anywhere! I did a few checks with my trusty ohm meter, no breaks were found just the expected low resistance DC loop. More attempts to 'dip' the Delta Loop followed with no result! I was running out of day time so I quit for the day.

Next morning I resumed tests. I even trotted out my trusty noise bridge and a good receiver. Readings made no sense. I persevered for a while but then decided to cut my losses and forget about the loop altogether, and I put my inverted V dipole back up on the pipe mast, which was done without major incident.

As I do weekly WIA News broadcasts on 40 m, I wanted to see if I could improve my signal further although the 'reduced height' 40 m inverted V dipole was used the previous weekend with excellent results. I need not have bothered with the Delta Loop, as the inverted V dipole was working well! A lot of effort in the backyard for nothing!

Why I could not find a 'dip' with the Delta Loop continues to be a mystery. I suspect that a metal fence running close to and under the loop, and in the same line was probably detuning it somehow. In any case it did not really matter in the end. It was a case of something 'simpler' being better, and easier.

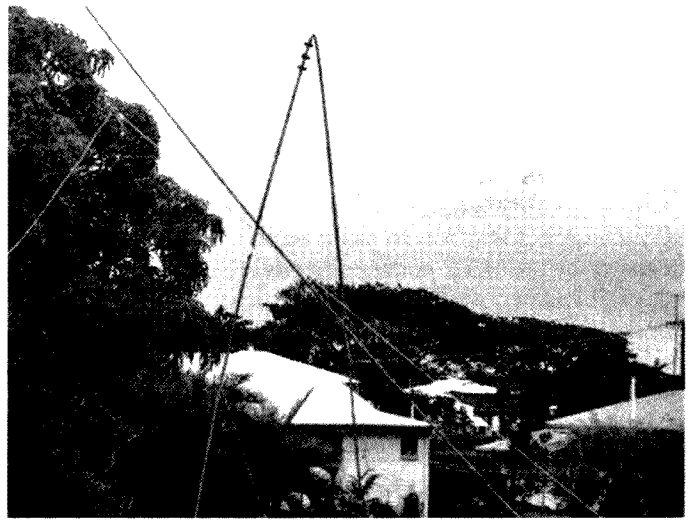
The experience taught once again that the humble inverted V dipole is actually an easily erected, excellent performing antenna. Being at a relatively low height may actually be an advantage in terms of improved local and semi-local coverage, my main areas of interest. Why bother with something more elaborate when there is no real point in doing so?

Shortly after this experience a similar scenario presented itself.

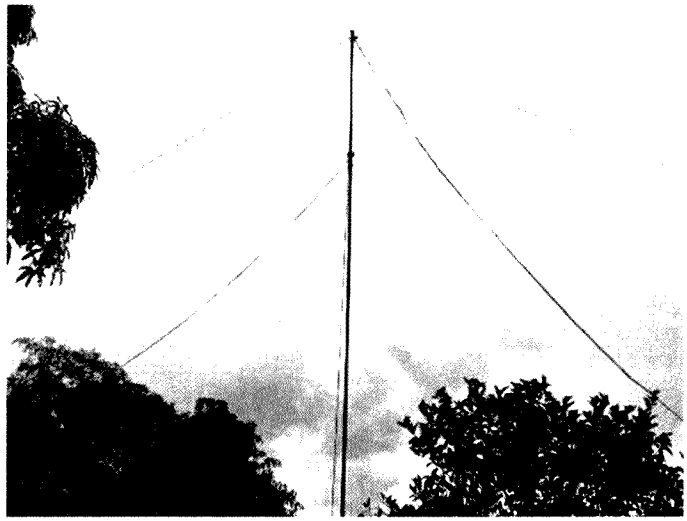
A three element Yagi that I had built for the VHF FM broadcasting band had also suffered some storm damage. I was going to rebuild it when I came across a design for a simpler, more compact two element Yagi for the FM broadcasting band claiming good performance. So using parts from my old Yagi, I built it and as claimed it worked very well.

Another example of the same sort of thing. The law of 'diminishing returns' applies! That is worth thinking about!

ar



The damaged 40 metre inverted vee mast.



The current 40 metre inverted vee mast, 7.5 metres.

News From

Keith Bainbridge VK6RK

VK6

Welcome to the August edition, one that I thought might not appear this month. Then, at the last minute, input! Firstly news from the northwest.

Pilbara

Greetings all; not much has changed up this way since the last time we contributed. The numbers in the Pilbara have possible increased by one as Roger VK6FRAN was in the area many weeks ago, but without a radio.

He says that he will be prepared for two metres the next time he flies into Karratha. Unfortunately I have not heard Roger on our local repeater VK6RWR yet.

Speaking of our local repeater, it is moving! But only about 75 metres to the north. It is leaving our old rusty tower, which will be dismantled, to the local iron ore company's new, large tower.

Unfortunately we will gain no antenna height on the new tower, many other services have higher priority. But we will still be at 18 metres (60 feet). We do not expect any interruption to the repeater or the IRLP connection while changing over. With the change in location, the local hams will change the old trusty Philips 828 radio for a used but refurbished Uni-Lab KL150.

Michael VK6BHY and myself VK6HV are now on six metres SSB from the Pilbara, with minimal installations of 50 watts and vertical antennas. We continue to listen sporadically, but no contacts as of yet. **73 Steve VK6HV.**

Thanks Steve, I am sure there will be many looking for you on six metres as the conditions improve.

International Lighthouse/ Lightship Weekend

Once again Cape Naturaliste and Cape Leeuwin will be activated for the International Lighthouse weekend, on 15/16 August.

Nigel VK6KHD, with XYL Jane VK6FJPD and Bernard VK6FBRB will crew the light at Cape Naturaliste The Geographe Bay Tourist Bureau will put on extra attractions this year to help with marking the lighthouse weekend.

Wally VK6YS will man the Cape Leeuwin Light and is looking for help with operating over the weekend; anyone interested should contact Wally via our website www.westozdx.net

73 Nigel VK6KHD.

Southern Electronics Group

Hello all. Just to let you all know about some upgrades to the SEG repeaters that occurred Friday 19 June, during the sub-Antarctic weather conditions.

Bevan VK6BL and I went to Mt Clarence in Albany to re-install the VK6RAL 70 cm repeater and cavity duplexer in the hut. We also installed a large 12 volt 120 AH backup battery system to keep the repeaters on air during power outages.

The 70 cm repeater is now back on air on a new frequency, 439.950 MHz, with a -5 MHz offset. The 70 cm repeater is now permanently linked to the VK6RAA 2 metre repeater at Mt Barker, on 146.825 MHz, the new system giving coverage from Albany in the south to Kojonup and Katanning in the north. The audio across the linked system sounds very good.

After lunch we ventured up to Mt Barker and were joined by Wes VK6WX at the repeater site. We installed a new cavity duplexer on the VK6RAA two metre repeater as well as a large 12 volt 450 AH battery bank to keep the repeater on air during power outages. Unfortunately the Mt Barker weather was no better than Albany.

Signal reports are welcomed on coverage of the repeaters. Many thanks to all those who assisted with the project, in particular Kerry VK6NHI for reprogramming the 70 cm repeater and reworking both sets of cavities, Rick VK6XT for his donation of a large 12 volt battery and diodes, and Bevan VK6BL for his donation of the battery boxes and terminal clamps.

We have finally been able to confirm some dates for the next Southern Electronics Group (SEG) Foundation Licence Course. The course will be run on the weekend of 29-30 August 2009 at the Mt Barker Community College in Mt Barker. If you are interested, please contact me. There is also information regarding the course on the SEG website at http://www.hamradio.org.au Click on the 'Exams' link on the main page.

We will be able to conduct exams/ assessments on this weekend for anyone ready to upgrade their licence. If you have any further questions, please feel free to contact me. 73 RobVK6LD.

The repeaters in the south are certainly getting a new lease of life and many more projects are planned to further improve things down there. I will be in Denmark on the weekend of 19 July so will take a first hand look at the improvements.

NCRG

By the time you read this there will have been a very serious attempt on the IARU contest from Bernd VK6AA and Kevin VK6LW from the club premises. Both operators are in serious contention for bigger events in the future and need to get a good score over the weekend. As I write this, a week before the event propagation is not looking too hot, so hopefully the 'Gods of the Ionosphere' will have looked after them both!

The club AGM was held recently and the new committee is: President Wayne VK6EH, Vice President Neil VK6NE, Secretary John VK6JX, Treasurer Andrew VK6IA with the rest of the committee being VK6PY, VK6RK, VK6FJA and VK6TWJ. I wish the new committee success especially with the substantial increase in membership fees to align the club with the costs of running a top contest station and arguably the county's best club premises .

Hamfest 2009

Hamfest is on again, or may even have happened by the time you get this edition. The date is Sunday 2 August, at the Cyril Jackson Community Centre, Fisher St., Ashfield 6054. Hopefully you will not have missed the premier amateur radio event in WA. A full report will follow in next month's magazine.

That is it for this month. I hope to have seen you at Hamfest and had a chance to chat with you; any suggestions for the column will always be considered and then discarded!

Very 73 Keith VK6RK.

Stef Daniels VK5HSX

VK5

South Coast Amateur Radio Club – Half Yearly News.

The first half of the year has absolutely flown past, with the club achieving quite a lot over the months since the New Year began.

Prior to the club officially opening, there were members who were involved with the Summer VHF/UHF Field Day in January. Barry VK5KBJ, Stef VK5HSX and Andrew VK5LA participated in the contest, operating VK5ARC/P from Loud's Hill (PF94), where we received eighth place nationally and third in South Australia, with 2362 points.

When SCARC officially began, particular focus was on making sure the Club's radio shack VK5ARC was once again fully operational since the move from the old clubrooms, which were located at the Karawatha Hall in O'Sullivan Beach.

We had the task of relocating the tower, along with antennas, and so on when we moved back in 2007. However long negotiations with the local council were required before the tower installation could proceed. This took over 14 months before approval was finally received.

The club then worked flat-out on the installation of the antennas, coaxes and benches, before we could think of what radios we required. There are many people who need to be thanked; however there are too many to mention, I would like to thank everyone who was involved in helping to make the dream finally a reality. It would have not been possible without your contributions.

So keep a listen out for VK5ARC around the bands, which include 160, 80, 40, 20, 15, 10, 6 and 2 metres, plus 70 cm and 23 cm. The club also has a satellite tracking system installed, with thanks to Jim VK5JST for his construction efforts.

SCARC is moving forward by having its own EchoIRLP on its VK5RSC repeater 439.825 MHz (-5 MHz) where the IRLP Node #6278 and EchoLink Node #399996 are operational. We would like to hear you connect and say Hi.

There has been minor change with the Committee, with Dicky VK5PRD unable to make the meetings, exchanging with Stef VK5HSX as the fourth Committee member. We thank Dicky for his efforts and we realize the commitments needed for effective work, along with having a family at home with sporting clubs etc. Thanks again, Dicky.

The club organised various project nights, as well as guest speakers, which were warmly received. Topics included talks from Tony VK5ZAI (satellite communications), Dean VK5LB (linears) and Robin VK5ATT (WICEN). The various projects worked on included: Mitch VK5AZM (RF sniffer) and Iain VK5ZIF (UHF dummy load).

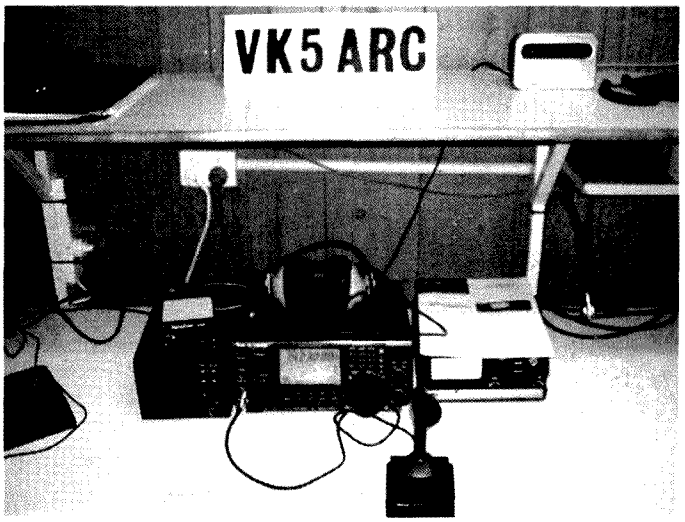
We also had a mid-year Dinner at the Christies Beach Hotel, which was well attended and thoroughly enjoyed by all. There are a few items already organised, or being organized, for the second half of this year.

If you have any requests for talks or project items for construction, then please contact a member of the Committee for consideration. Events that soon are coming up include: A demonstration on "Oscilloscopes" by Jim VK5TR on 15th July, "Gadget Night" on 19th August, 2009 AGM on 25th November and Annual Club BBQ 9th December. Thanks to Morgan VK5MMM for his efforts in securing guests and projects for members of the club.

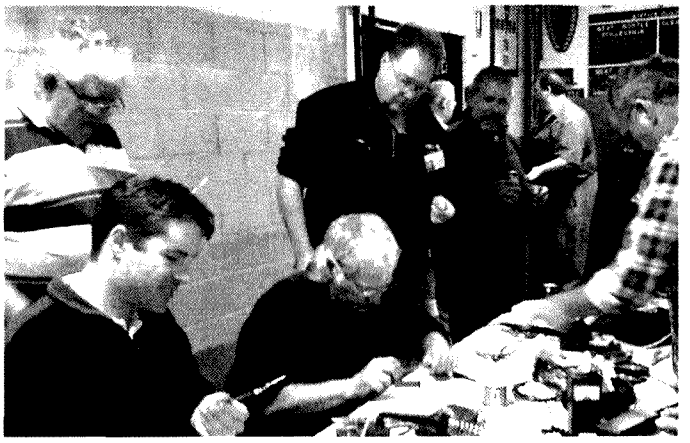
The winter brings the Rally, which is coming up very soon. If you wish to participate in assisting with communications, then contact either RallySA http://www.rallysa.com.au or Dave Clegg VK5AMK by email (vk5amk@wia.org.au) to find out what is required.

Stef Daniels VK5HSX, Publicity Officer, South Coast Amateur Radio Club Inc.

AHARS notes appear on page 47



The SCARC VK5ARC radio shack – HF section.



Members working on the VK5AZM sniffer.

New era of digital amateur television begins

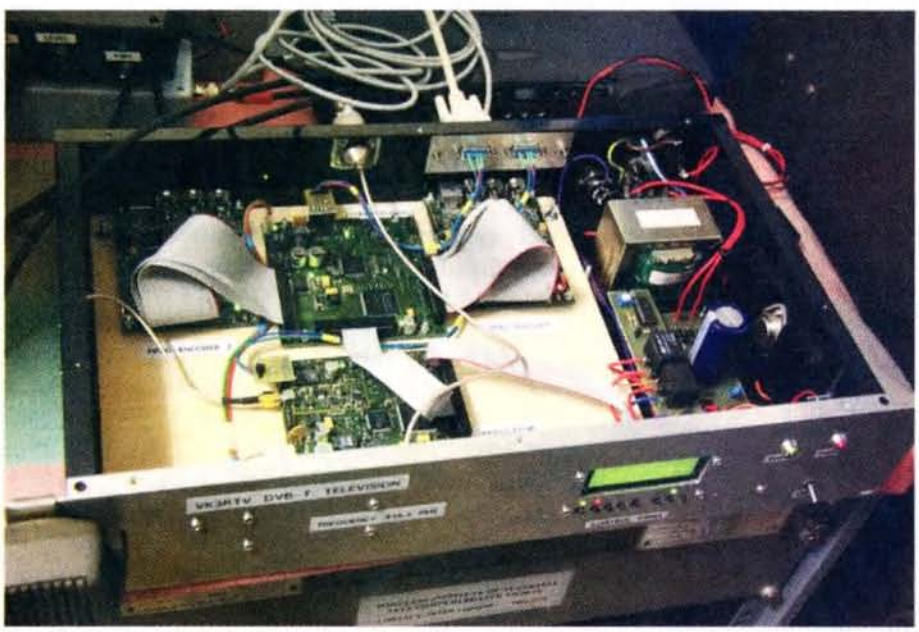
Peter Cossins VK3BFG and Jim Linton VK3PC

The arrival of digital amateur television is an outstanding achievement, occurring at the same time as commercial and ABC stations are just finding their way with the same digital medium.

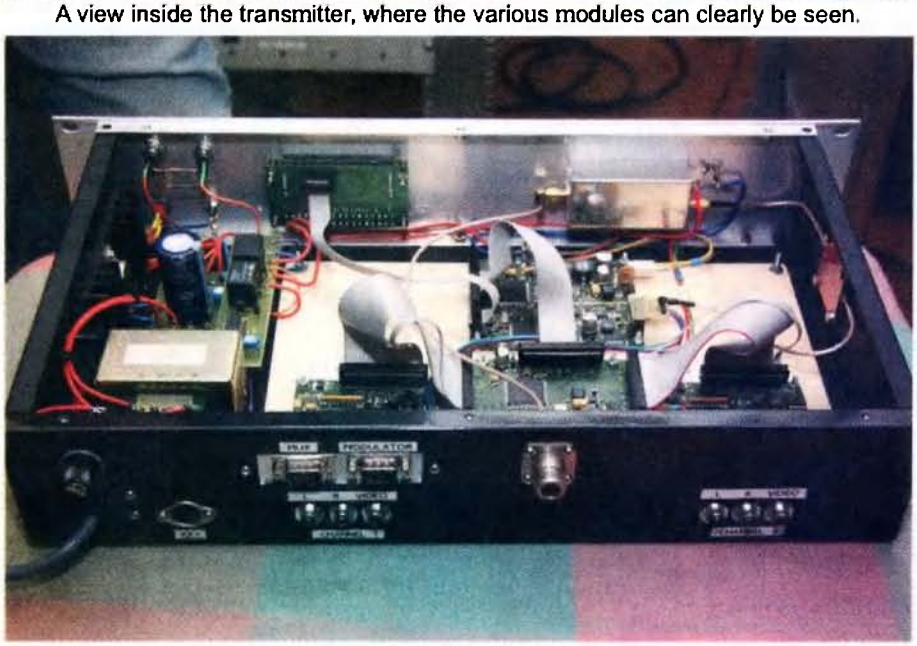
The Melbourne Amateur TV Repeater, VK3RTV had its first test transmission of the terrestrial digital standard, DVB-T, on Sunday 7 June using a frequency of 446.5 MHz.

High quality pictures were received more than 40 km away, only limited by lack of stations further out. One station at about 30 km received the signal on his lounge room TV using a domestic TV antenna.

There was obvious delight heard in the voices of those reporting confirmation of their reception via the 2 metre 147.4 MHz ATV liaison frequency.



A view inside the transmitter, where the various modules can clearly be seen.



A view of the rear of the unit.

The output power was a very modest eight watts, but some stations received the signal with power levels down to two and then one watt. It is expected that the final output power will be around 15 - 20 watts.

VK3RTV is one of the oldest continuously running ATV repeaters, first on air in 1977. It was built, maintained and upgraded by Peter VK3BFG for more than 30 years, with the help of others in the Melbourne ATV Group. The digital project was proposed and engineered by him.

The major funding came from Amateur Radio Victoria and the Wireless Institute of Australia, which provided $1,000 under the WIA Club Grants Program.

The new digital system is multiplexed with two independent video channels each with two channel audio. VK3RTV has three input frequencies of 1250 MHz, 1283 MHz and 10.41 GHz and it is possible to have any two of the three running simultaneously.

During the test, VK3RTV1 carried live video, while VK3RTV2 had a colour bar test signal. The test was introduced by Jim Linton VK3PC, President of Amateur Radio Victoria.

Becoming the first face of DATV in Melbourne, he announced to camera "Welcome to Television, Digital Amateur Television VK3RTV", in a re-enactment style similar to the start of TV in Australia through TCN9 Sydney presented by Bruce Gyngell.

Reference was also made to radio amateurs having a long history of experimenting with various forms of television and publicly demonstrating it before TV officially began in Australia in September 1956.

The arrival of digital amateur television is an outstanding achievement, occurring at the same time as commercial and

ABC stations are just finding their way with the same digital medium.

The test transmission from VK3RTV on Mt Dandenong east of Melbourne also included a "show 'n tell" session conducted by Peter VK3BFG of the German made DVB-T boards and associated equipment.

As the amateur frequency is a non-standard TV channel, it is necessary to use the manual tuning function of a Set Top Box or Digital TV. On auto tune, the digital receivers seem to hop between standard channels.

Set Top Boxes known to work are TEAC SDB451, Compro Videomate PCI TV Tuner Card DVB-T300, RCA TRC 501AU, HUMAX DV-1000T, TEVION TV-1202 and a Twinhan DTV Alpha - USB. A Media Star DT-720 or Strong SRT 5006 may also work, although this has not been verified.

It would also be possible to use a down converter from 446.5 MHz to a lower standard TV channel and then any receiver should work.

Work on the project continues with the next stage being the controller to do all of the switching necessary to manage the complex system, and a video identification for the repeater.

The VK3RTV DATV project has sparked interstate and overseas interest. A detailed more technical focused article can be expected to appear in the WIA journal *Amateur Radio* magazine once the project is completed.

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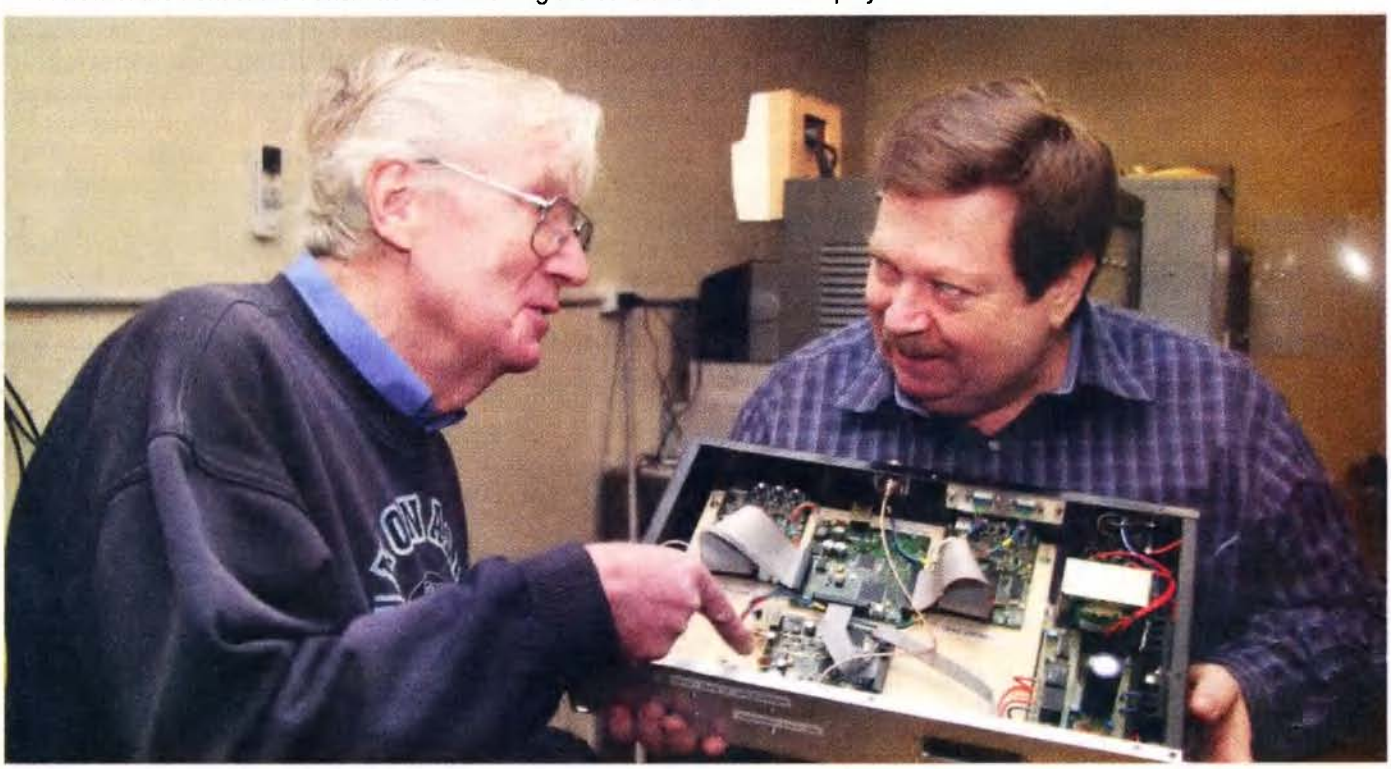
Photographs: Robert Broomhead VK3DN



A view of the front of the transmitter box showing the control buttons and display.



The antenna array of stacked Yagis can be made out amongst the many other antennas on the tower at the Mt Dandenong transmitter site.



Peter Cossins VK3BFG and Jim Linton VK3PC during some animated discussions about some of the features of the transmitter.

News from

Tim Mills VK2ZTM
C/- arnews@tpg.com.au

VK2

It is anniversary time in the far north of VK2 with the **Summerland ARC** turning 50 this month.

For the month they have the special callsign VI2SRC50. The 50th Aniversary Dinner will be held on the evening of Saturday the 8th at the Goonellabah Tavern. On Sunday the 9th SARCFEST from 0800 at the club rooms at Richmond Hill.

Work proceeded throughout last month on the tower, antennas and other work at the Clubrooms. This month is also busy with education: with a Foundation course on 15th and 16th and Advanced Theory on the weekends of 22/23 and 29/30. Inquiries to vk2dlr@sarc.org.au . There has also been many WICEN exercises with local horse enduros.

HADARC has exams on the 8th. Contact Tony VK2BTL on 02 9487 3383 or check the web site www.hadarc.org.au

Note the change of date and venue for the **Blue Mountains ARC** Winterfest this month. Details changed after last month's deadline. Winterfest will now be on Saturday the 22nd August at the Penrith Rescue Organisation (VRA) in Simeon Road, Orchard Hills. This is also the venue for BMARC meetings. The move was brought about due to renovations being undertaken at the former Glenbrook site.

FRED changes frequency. Australia's oldest 2 metre repeater – it was established before the formal start to VK repeaters in 1968. FRED is operated by the **Orange & District ARC** on Mt. Canoblas. It has changed to 147.025/147.625 MHz. The former channel 6700 is maintained and will be established as an "in town repeater".

FRED started life 'under test' on the old frequencies of 145.854 and 146.000 MHz. An early intermod on the mountain top was resolved by moving the repeater receive frequency from 146 to 146.100 MHz. When the first repeater planning meeting was held at Wodonga in September 1968, FRED was assigned the channel 1 split of 146.100 in and 145.600 out. When the next generation of repeater channels were developed in Albury in July 1972, the input remained on 146.100 with the new output on 146.700.

In the beginning FRED operated with antennas above and below an elevated platform between a couple of wooden poles in the middle of the mountain top. Next move was to place the receiver at the southern end in one of the communication complexes and the transmitter at the northern end at a TV Tx site.

There was several hundred metres of separation interconnected with a two pair cable – just buried – across the rocky terrain. This intermittently failed due to the rabbits having a taste for the PVC. The Club then moved the receiver to the transmitter end and for a while had the advantage of vertical separation provided by the host tower.

Then the two TV channels were joined by additional services of some of the highest output powers in use in Australia along with the many FM services again of considerable power and the mountain top became intermod city. For the past 8 to 10 years FRED has either been off air or severely down graded on the receive side. Hopefully the frequency change will give Australia's oldest repeater a new lease of life.

The **Orange District ARC** meet on the first Friday evening at 64 Warrendine Road at 7.30 pm. This month is their AGM. Contact address is P. O. Box 1065 Orange 2800.

The **Mid North Coast ARG** will be the first Field Day next year in the 2010 celebration year, being held at the regular site in Coffs Harbour on Sunday the 24 th January. A VIP guest has been lined up to open the Expo advised the President of MNCARG, Gary VK2ZKT. The following month the **Central Coast ARC** will have their Field Day at the Wyong Race Course on Sunday the 28 th February.

The **Oxley Region ARC** have moved their weekly evening 2 metre net back to Wednesday to take advantage of recently installed equipment at their meeting location – the SES building in Central Road, Port Macquarie. Club members attend SES activities on Wednesday evening. The other weekly net is Sunday morning. Both nets are conducted on VK2RPM 6700.

A reminder that the **Manly Warringah Radio Society** now meet at the Terrey Hills Seniors and Youth Centre, Yulong Avenue, Terrey Hills. Check out the map on www.mwrs.org.au For the moment the club telephone may not be operational due to the relocation.

VK2 WICEN in conjunction with HADARC are to re-establish the former WICEN repeater to a new site back at Chatswood. This month the major exercise was the week long Shahzada Horse Enduro 17 to 21 st.

The Hawkesbury Canoe Classic – 24/25th October – has a change in that the former major check point "Echo" is downgraded and "Delta" becomes a major maritime -water- checkpoint. Register your offers of help for this event now.

In October there will be the annual Barrington Tops Search and Rescue Exercise for the search for the missing Cessna 210 VH-MDX over the weekend 17/18th. WICEN is always on the lookout for photos of activities and exercises for publicity purposes. Contact via 0408 397 217 or email to "operations@nsw.wicen.org.au"

This is month of both the RD Contest and the Lighthouse event on the same weekend. Plan now to take part in both and help the State score in the RD and have a good time with the Lighthouses. **VK2WI** will transmit the opening address of the RD at 1730 Saturday via the normal broadcast channels.

Sydney amateur Syd Griffith VK2AHF was recently recognised in the Queen's Birthday honours list. He was awarded the Public Service medal ... for outstanding public service, particularly in innovative and sustained contribution to the enhancement and improvement of the technical capabilities of the New South Wales Police.

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News from VK3

Jim Linton VK3PC
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

International Museum Weekend

This annual event began in 2002 and continues to grow, this year involving five Australian museums.

Our Event Coordinator Terry Murphy VK3UP liaised with the Maritime Trust of Australia and its volunteers who run HMAS Castlemaine as a museum moored at Williamstown's Gem Pier.

Radio was vital during WWII and many wireless operators had been radio amateurs before putting on a uniform to serve their country. Amateur radio has now put HMAS Castlemaine museum ship on the airwaves, during the International Museum Weekend.

VK3RAN was operated onboard Sunday 21 June making around 120 contacts throughout Australia and New Zealand, mostly on the 40 m band. Operators were Michele Grant VK3FEAT, Terry Murphy VK3UP and myself.

Also in the log was VK3ATL at the Geelong Regional Museum and VK3DJ Queenscliffe Maritime Museum (both a joint effort of the Geelong Amateur Radio Club and Geelong Radio & Electronics Society), VK3APC Moorabbin & District Radio Club Museum, and VK7FLI Furneaux Museum on Flinders Island.

Several radio amateurs in other states indicated they would be making inquiries about activating their local museums next year, and a few clubs are known not to have had enough time to organise things this year but are likely to be involved in future.

The weekend coincided with an annual display of military vehicles on Gem Pier that attracted many visitors who toured the ship and saw VK3RAN in action within the ship's bridge, that had magnificent views of the bay.

New VK3RAN QSL cards are being designed and plans have been made to put it on air for the International Museum Weekend in 2010.

Williamstown Lighthouse activation

On the weekend of 15-16 August, the International Lighthouse and Lightship Weekend, Amateur Radio Victoria will again be putting the Williamstown Lighthouse and Timeball Tower on air.

This will be the fifth year that VK3WI has activated the lighthouse under a permit issued by Parks Victoria.



Jim VK3PC and Michele VK3FEAT as acting "Sparks" on HMAS Castlemaine during International Museum Weekend.

Ian Downie VK3XID, who initiated the activity back in 2005, returns this month to be our chief operator and event supervisor. Members interested in being involved should send Ian an email via arv@amateurradio.com.au

Education – Standard & Foundation

Another of the highly successful Amateur Radio Victoria bridging courses will be held next month and enrolments are open.

This course is designed to assist those who have their Foundation Licence and want to upgrade to the Standard Licence.

It will be held on the evenings of the five Wednesdays in September, a revision session on Saturday 3 October, with assessments on the Sunday.

These courses are conducted by our instructor Kevin Luxford VK3DAP and have helped many over the past four years bridge the knowledge gap between the Foundation and Standard levels.

The venue will be 40g Victory Boulevard Ashburton. Office partitions that previously formed an interior office and corridor have been removed to more than double the meeting and lecture room area.

The next Foundation Licence training and assessment weekend is September 26 and 27. Do you know someone who could be interested in becoming a radio amateur? Then please do tell them about this opportunity.

Inquiries about the Standard Bridging Course or the Foundation Licence event can be made to Barry Robinson VK3PV foundation@amateurradio.com.au or 0428 516 001.

VK3RTV goes digital

It is all thumbs up for digital amateur television following recent test transmissions from the Melbourne ATV repeater VK3RTV at Mt Dandenong.

The major project to bring the repeater into the digital age using German made

Continued at foot of next page

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

International Museum Weekend

This year the International Museum weekend was particularly notable in that two museum sites in Geelong were utilised in conjunction with the Geelong Radio and Electronic Society, the GRES, operating together as The Geelong Radio Group.

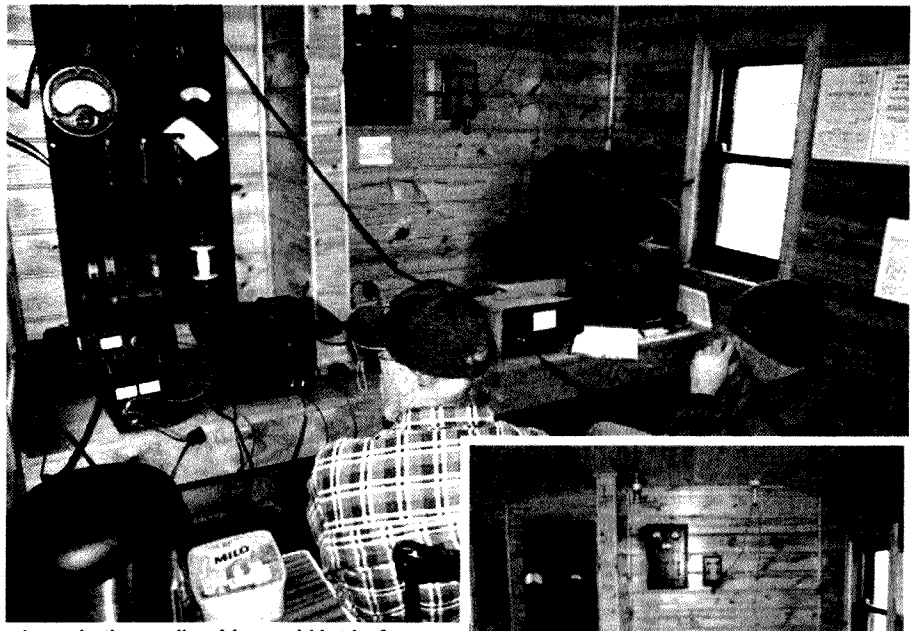
The Queenscliff Maritime Museum station was housed in a replica of the Marconi hut, built by the GARC and a local school with materials supplied by a local hardware company; the original hut was used for the first radio communication outside of Australia to Tasmania in 1906. Because of the power and antenna cables requirements, both doors of the hut were required to be open on what was a bitterly cold day. The station operated as VK3DJ on both HF and VHF over the 24 hour period working, amongst others, its sister station VK3ATL at the Geelong Regional Museum and also HMAS Castlemaine VK3RAN and Gavin VK7VTX on Flinders Island.

Being around three meters above sea level, and with a hill in the way, contact with the GARC IRLP node was only achieved with the assistance of Jim VK3VBC using his 2 metre wide spaced DX Yagi. Dallas VK3DJ, who had supplied the G5RV and 20 m ground plane, made several contacts stateside using a USA reflector in his namesake, Dallas, Texas, on node 9660.

In all over 30 contacts were logged for the weekend.

Amongst the other operators were Ken VK3NW, Lee VK3PK, Tony VK3JGC, Garry VK3FWGR, Calvin VK3ZPK.

The situation at the Geelong Regional Museum was markedly different from that at Queenscliff in terms of the room available and on site catering facilities provided by the two ladies in attendance. Over 50 contacts were made from the museum during the 24 hour period, although earthing problems on the Sunday caused a lot of RF feedback problems until earth straps were put in place. In addition to those pictured, VK3YHT and VK3ABM were present over the weekend with visits from VK3ALB, VK3FMIC, VK3FJEN and VK3NJP. The event also attracted 40 plus visitors on the Saturday. **ar**



Inset is the replica Marconi Hut before occupation. Main picture shows the hut operational with Dallas VK3DJ and Jim VK3VBC.



Ian VK3VIN with Barry VK3MBW and Barry VK3FBKS.

continued from previous page

TV broadcast standard boards was first proposed more than two years ago, but it was not until early this year the funding looked possible.

The Council of Amateur Radio Victoria allocated more than $3,000 and Peter Cossins VK3BFG with others wrote a professional submission to the WIA Club Grants Scheme that attracted a $1,000 contribution.

VK3RTV DATV can be received using manually tuned set-top boxes, and a list of about 15 brand name and models known to work has been published.

Peter VK3BFG tells us that the project's next phase is to build a new controller for the two channel DATV transmitter, and VK3RTV can then go 100% digital downlink.

Fancy that, amateur television beating the commercials to digital switch-over.

Centre Victoria RadioFest

It is coming back! Sunday 14 February at the Kyneton Racecourse. Watch for more details in coming months or check out the website radiofest.amateurradio.com.au

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Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

Once again, over the past three months our committee has provided us with many interesting and varied syllabus items, some of which are detailed here. We had one visit during this time and because of this we all ended up in gaol.

Do not be alarmed. None of us has criminal tendencies. We had a guided tour of the now decommissioned Old Geelong Gaol. The purpose of the visit was to let those members who had not had the chance to visit the gaol see not only the gaol itself but also our museum which is housed in what was originally an administration area of the gaol.

The night visit was organized by Keith VK3AFI who acted as tour leader. Keith had lived opposite the gaol for many years and had become friendly with many of the prison officers. Because of this he had on many occasions been inside the prison walls (as a visitor not an inmate) and had acquired considerable knowledge of the workings of the gaol system.

Keith even told of a number of breakouts he had witnessed over the years. After the guided tour of the gaol the members then looked at the various museum exhibits of old radios, telephones and valves on display. Visitors to Geelong may care to visit the gaol and take a self guided tour and also have a look at the museum collection.

A new program has been prepared for the last six months of the year. The emphasis during this time will be on homebrewing and in particular homebrewing of test equipment.

Some five evenings have been set aside for the construction of the "VHF Powermatch". This versatile test instrument was described in the magazine Electronics Australia back in 1990. The instrument allows the user to test SWR, power, RF impedance, and also has an RF probe. As well as construction nights for the project there will also be other nights devoted to the explanation of how each module works and how it can be used.

Bill VK3YHT teamed up with Pip VK3YME and gave a practical evening on coaxial transmission lines. They outlined the various different types of coax available, explaining which particular type could be used in a particular application. The talk was augmented with practical demonstrations of sweeping a cable using a spectrum analyzer and tracking generator to show the losses in the line.

Not only was this an interesting talk that was ably presented, it also showed the level of expertise available within our club. Our newer members to the hobby now realise how important the transmission line is, and how easy it is to lose power in the transmission line.

We had two guest speakers for the quarter.

The first was Barry Abley VK3SY. Barry has been a guest speaker on a number of occasions in the past. Once again he did not disappoint us with an excellent presentation on the history of wireless telegraphy. Barry outlined the history of telegraphy from the humble beginnings through to the use for maritime communications.

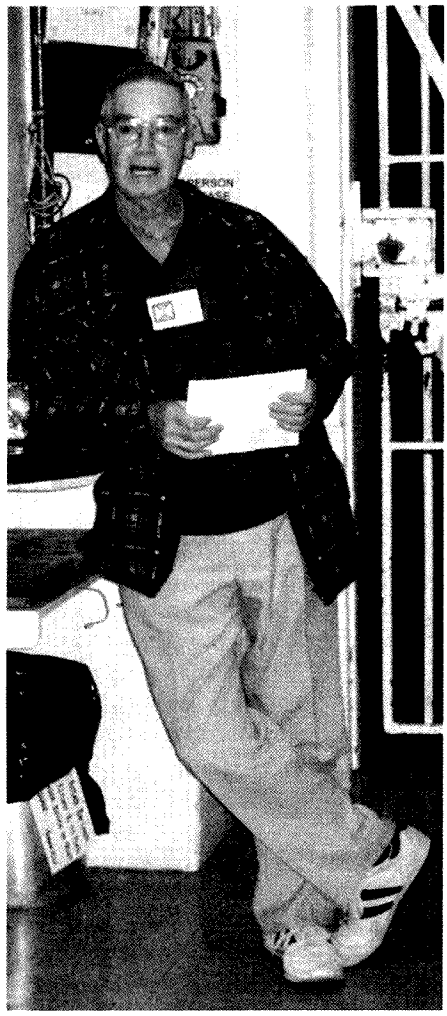
One fact that was new to us was that the first ship to shore communication took place in Victoria between a ship in Port Phillip Bay and the fort at Queenscliff. Anyone visiting Queenscliff may care to have a look at the plaque that commemorates that historic occasion. The plaque is located outside the walls of the fort on the North West corner.

Our second guest speaker was Drew Diamond VK3XU. Our members are familiar with Drew's construction articles and many of our members have constructed some of his designs. His topics for the evening were "paddy board" construction and coil construction.

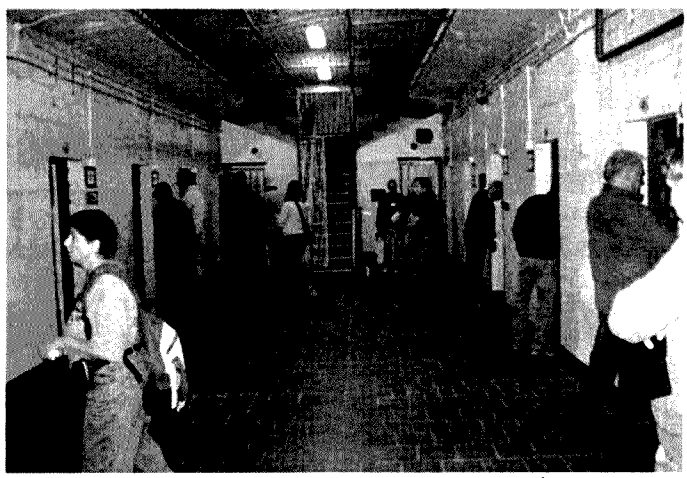
As you would imagine this was an excellent presentation on construction methods and gave us many new ideas to be used on our own work benches.

Visitors to Geelong are invited to come to our regular Thursday evenings which are held at 237A High St. Belmont at 8 pm local time. Or perhaps join our Wednesday group for a coffee and a chat any Wednesday morning from about 9:30 am onwards.

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Keith VK3AFI, our tour leader for our night in gaol.



Members looking at the "private accommodation".

Amateur Radio Direction Finding (ARDF)

Bruce Paterson VK3TJN
Deadman's Flat 28th June 2009

The Deadman's Flat Hageby

It has been a while since AR has seen reports into ARDF submitted by Jack Bramham VK3WWW, but the Victorian ARDF Group (WIA) has continued to be very active in this branch of amateur radio.

The club was formed prior to the first IARU Region 3 ARDF Championships held in Australia by TARC in the 1990s, and has since staged, for WIA, the very successful 2003 Region 3 Championships near Ballarat.

ARDF is an on-foot competition where you try to locate up to 5 transmitters on a defined map area using hand held direction finding (DF) gear. The transmitters take turns transmitting on the one frequency for one minute each.

Competitions are commonly held using either 2 metre or 80 metre frequencies, with different DF gear required for each. For more specific details, take a look at our club website www.ardf.org.au

Here is a report on our most recent club event held at Deadman's Flat, not far from Daylesford, Victoria.

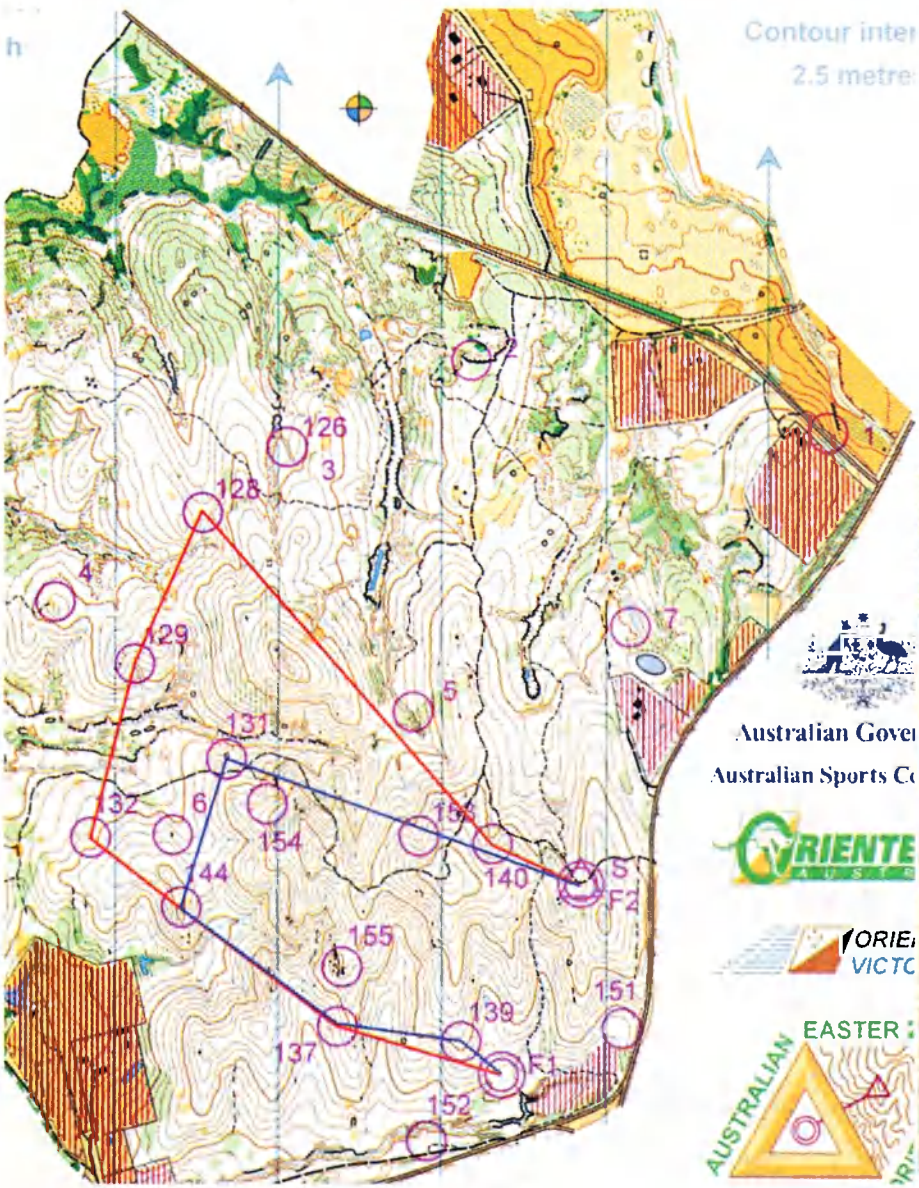
A Hageby event, in orienteering terms, is where you do a number of small loops, returning to the same point to change over maps for the next loop.

A radio Hageby is much more interesting, with a different form of radio navigation on each loop. We often refer to our events as RadiO, short for Radio Orienteering. This event was combined with a Bayside Kangaroos Orienteering Club bush orienteering event.

A FoxOr is a low powered transmitter of a few milliwatts transmitting continuously, placed somewhere inside a large (100 m) diameter circle on the map. To find a FoxOr you navigate on the map to the circle where hopefully you start to hear the, small, low powered transmitter, then attempt to find it.

Before the event I had 14 registered entrants. Wow, if they all showed up it might be a record local attendance for one of our RadiO events, perhaps challenged only by Ian's super organised Woodlands event a while back and of course eclipsed by the 2003 Region 3 Championships .

The day dawned freezing as I crawled out of my tent equipped with many layers,



In map image: 151→155 is the 80 m ARDF leg, 1→7 is the 2 m FoxOr leg, 5-in-5 is not shown. Bush-O legs for Short (Blue) and Long (Red)



Marta VK3FTZL, Fitzel and doggie bag return on 80 m. (Fitzel probably has a different 'fox' in mind)

The essence of ARDF: a sniffer, a scent, a sprint and a smile



Suzanne VK3FSZI races off after 2 m

beanie and gloves. It promised to be a fine day and at times it turned out so. I had strung up the 80 m antennas the afternoon before (with help from Jun and Greg). We really must get those extendable poles commissioned! I have had enough of flinging small rocks through high branches only to have the rock fall, or, more typically miss altogether.

I had only to put out the seven FoxOrs, attach the five 80 m ARDF boxes (what happened to those "day before" timers we used to have?) and quickly place the 2 m 5-in-5 course near the Start. This all took about two hours (driving, riding, running, clambering(!), gradually shedding layers of clothing), but I did have the fall back option of placing the 5-in-5 after competitors were on their first leg.

For some reason bush orienteering competitors were still not in evidence a mere 5 minutes before their mass start, but a fair RadiO crowd was gathering. Turns out, though Peter predictably was not able to make it in time, we gained an extra three with Grant Jeffrey, Pierre Brockner and Douggie joining in the RadiO. Sixteen! Grant had to choose between the RadiO and the bush orienteering, so despite the fairly lengthy Long course he tells me he had a good time. People were still getting organised so I ducked off to fix an errant TX#4 in the 5-in-5 leg that was not on.

The briefing outlined the four loops competitors had to do. There was some confusion about frequencies and which-leg-to-do-next for those who were not listening closely. The Long and Short had a different order in order



Neale VK3XJH with daughter Bridgette trying 80 m.



Mike in ARDF club colours



Adam VK3YDF dominates 80 m



Ian Chennell VK5JH/ VK3IDC tries 80 m for the first time.

to maximise the availability of club 80 m sniffers (a sniffer is a small, lightweight receiver and antenna combination). This was not a problem as I had a spare unit, plus my own left unused.

FoxOr

The FoxOr on 2 m consisted of Long: 6 out of 7 or Short: 4 out of 7 FoxOr circles. Some thought had gone into the placement so that the best ones to do were not immediately obvious due to terrain, rather than just distance.

We had some problems with signal strength on some of the legs. All were set on low power, but it seems this differs between units. There also appears to be a difference in sniffer sensitivity, with some less sensitive units making it harder for some. David now has all the FoxOrs and will perform some comparative tests to figure out what is going on.

This made a probably too lengthy loop even longer. I had made this loop for Long roughly the same length as one of the bush orienteering A course loops, worried that the 5-in-5 would make the total distance too short. In *line* distance it did seem on the short side, but the map is quite deceptive! I should not have worried about course length being too short as it turned out. Next Hageby the FoxOr loop will be shorter. Promise!

ARDF

Most enjoyed the 80 m ARDF. Short coursers had to get any three of five, Long all five. They were closer spacing than International rules to make the loop short. With the terrain involved, many thought this quite long enough, thank you. Again, the quickest loop was possibly not the shortest. A couple of Txs were right near the Finish/Assembly to keep in tune with the Hageby concept (so near yet so far...). Well done to Grant tackling a full five ARDF for the first time.

5-in-5

We have only had a few 5-in-5s in the past and I thought it would make an ideal short Hageby loop. I laid the course by walking in a line for about 50 seconds and plonking down a 2 m ARDF transmitter, then on to the next. I was careful to have the course cross over itself.

The idea is if a competitor is quick enough, they have time to run to each transmitter and find it within the minute it is on, so finding all 5 transmitters in 5 minutes (5 in 5). Then, back to the start.

Each TX was equipped also with an electronic SportIdent control for quick punching, and the homing beacon at the Start has the Finish punch. The Start punch on the changeover table was later used to calculate the amount of time to deduct from each competitors total as the 5-in-5 loop has to be started when TX1 starts, not when a competitor arrives from a prior loop. Good idea Adam.

Next time we will not use the homing beacon, instead competitors can just navigate back. It interferes a bit with competitors starting.

Adam proved the 5-in-5 was do-able, completing it in just over 6 minutes. He said he had to run fairly hard though, so perhaps a 50 second fast walk is a bit far considering the overhead of punching and DFing. No-one else managed it in 5.

Ewen claimed sniffer beam issues mid course, and others had a truly dreadful time, some taking longer than their entire 80 m ARDF leg! Not sure why there were so many reflections because each TX would have been line-of-sight to the next, except perhaps the final leg TX#5.

I later discovered the reason for the recalcitrant Finish punch. I had managed to reprogram it as a Start control (weird, because it was definitely a "wired" finish at the recent MTBO event). Hence the Cleared punches I had on the table all beeped when tested... a Start was what they were expecting, but anyone who had done the course did not beep (already 'Start'ed). All makes sense now, so we do not have to blame new fangled SI sticks or the Homing Beacon causing EMC.

Bush-O

Most headed off with (tired) relief on the final Bush-O leg to the finish. Not everyone had a great time on this one though. Greg was sighted waving from the wrong side of a chasm on a couple of occasions and admits he really should have read the map a bit better. We all know that feeling!

I have also heard Louise was so annoyed she managed to miss the Finish altogether and was blowtorching the surrounding bushland with deep felt profanity when the Registration tent simply refused to metamorphose into a Finish tent.

Results

I hope everyone had a good time, despite the Long course being a bit long (but that line distance is indeed correct). Alas, the DNFs below do not show the successful good legs these competitors did. It might be worth keeping a rough record of the stage times in the future. Hope Marta is feeling better.

Special mention to Greg Williams for (mostly) completing his course entirely walking in one of his rare bush appearances (hopefully we will see more of him, and Douggie). Very well done to Grant for completing a Long course in his first major radiO event.

PS: Where did Douggie go? He never returned to the Start on one of the legs.

Radio Long Results

1	Gary Panter	AR 129.10
2	Ewen Templeton	AR 173.57
3	Grant Jeffrey	BK 175.50
	Louise Hall	DR DNF
	David Beard	AR DNF
	Marta Salek	AR DNF

Radio Short Results

1	Adam Scammell	AR 76.53
2	Darrian Panter	AR 122.55
3	Mark Besley	AR 149.42
4	Suzanne OCallaghan	AR 153.28
5	Greg Williams	AR 175.59
6	Clifford Heath	AR 183.58
	Pierre Brockner	BK DNF
	Doug Canning	AR DNF
	Dianne Shalders	AR DNF

More detail about the ARDF group, including contact details, can be found at the website: www.ardf.org.au

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"Here it is !" says Sue to Ilsa

News from



Well it has been a little quiet and slow in Queensland for the past month, so if you have anything new or interesting happening within your club, do not be shy and tell the rest of our readers all about it.

SCARC

The Sunshine Coast Amateur Radio Club (http://vk4wis.org/) wishes to announce that it will be holding its annual Sunfest in September on Saturday the 12th 2009. At the usual place, Woombye School of Arts, Blackall Street (UBD map 66F12), Woombye.

There will be 25 tables of new and pre loved gear for sale, displays and information tables for new and old operators alike. The entry fee of $5.00 will be used on the booking of the hall and maintenance of our services to the area.

To make a reservation for a table please contact Harry Ameer Beg VK4TK on 0409488025 or email vk4tk@dodo.com.au or Noel on vk4nl@iprimus.com.au Booking early will ensure that you get one of the very popular tables. Cost of a table is $15.00 and this includes two entry tickets in the door prize – additional tables will be $10.00 with one entry in the door prize. There will be excellent door prizes as usual this year. Entry to stall holders is 0700, entry to general public 0900 (local time). The door prize will be drawn at 1300. Be there to win other prizes throughout the day.

There will also be the very popular "Kitchen" as usual with hot and cold food and drinks. "Talk in" on the local repeater on 146.850 from around 0700 local time will also be on the agenda.

Thanks to Harry VK4TK for keeping us informed on events within VK4.

CHARC

The Central Highland Amateur Radio Club Annual General Meeting is taking place at Camp Fairbairn near Emerald from late Friday afternoon 25th to Sunday Morning 27th September. Accommodation is available on site; there is a big BBQ dinner and Monster Auction on Saturday Night and a Recovery Breakfast on Sunday morning.

Time to prepare for a great weekend away from home and to catch up with some old friends (and make some new ones as well).

EchoLink is up and running: Steve VK4SMW and Rob VK4HW have just finished installing it on the server. The node number is 6037 for IRLP and 457011 for EchoLink.

To gain access to EchoLink the # key needs *to be used before the EchoLink node you want to connect to i.e., to connect to VK4RSA in Sarina the code is #360460; to disconnect use 73. To connect to IRLP you just need the 4 digit node number to which you want to connect. To disconnect use 73 also.*

Mackay and District Amateur Radio Association

Friday 7, Saturday 8 and Sunday 9 August sees the State Championship Horse Endurance Ride at Denison Creek Station, near the Retreat Hotel. Help the folks from the Mackay and District Amateur Radio Association to run communications support for this 160 km Horse Endurance Ride.

Expect to be on the ground by 2 pm Friday afternoon to be shown to your checkpoints. Play with radios in the picturesque countryside perched on top of the Connors Range.

SHAGS

Senior Hams and Geriatric Stirrers meet every Friday morning 9 am to midday at The Tropical Wanderer Resort, 394 Yaamba Road, North Rockhampton QLD 4701.

Beside the Pool or Bistro (depending on weather conditions), senior stirrer Les VK4QI and his wonderful wife June (non stirrer) have been entertaining this event for quite some years now. Members and guests are welcome to drop in for morning refreshments prepared by June, who I have been advised also does all the washing up. Thank you, June.

Ham operators from near and far have been known to drop in during their travels, with twenty-three being the record in one sitting. Can this record be broken? The morning displays a general chin wag, gossip and stirring session along with a little B.S. So next time you are passing through, whether you are local, interstate or south of the border drop in and say hello, you will be most welcome.

Until next time 73
VK4VKR (IRLP 6973)
On the side and listening.

ar



SHAGS gathering. L to R: Lyle VK4LM, Les VK4QI (standing), Brian VK4QB (standing), Bill VK4FGN, Bob VK4HRC, John VK4KDN, Merv VK4DV, Blair Smith (listener).

VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ
vk3hz@wia.org.au.

Winter VHF/UHF Field Day

The main event for the month was the Winter VHF/UHF Field Day, held this year on June 20/21 – one day before the shortest day of the year. Despite the time of year, the weather was quite reasonable in this (south eastern) part of the country and a number of portable stations set up – for quite a number it was their first time out. However, it seemed that only a hardy few elected to remain out overnight for the 24-hour duration.

Andrew VK1DA braved the hills around icy Canberra:

I operated on Saturday only in this event, from Red Hill, in the south of Canberra near Parliament House. My contacts were limited to 6 m, 2 m and 70 cm on which I worked 4, 24 and 12 contacts respectively. The only other VK1 portable station worked was Dale VK1DSH, on 2 m and 70 cm.

Conditions appeared to be very poor. Signals into the Sydney area were well down on last year. Only one VK3, Norm VK3DUT, was heard or worked. Weather at my location was quite mild with a few minutes of very light rain, out of a heavy overcast.

I had two site visitors, Aaron VK1FAPH and Johan VK1ABB, neither of whom I had met before. This was a result of publicising my intended location on the local mailing list and inviting visitors.

Thanks to those who did operate either as a portable or home station. And a special thanks to Brad VK2QO who has already sent me an eQSL for the very nice CW QSO we had during the afternoon.

Steve VK3DAG reports on his efforts to the northeast of Melbourne:

My father Rex, Spud Dog and I had an uneventful trip to Mt Terrible in the 4WD with A-Van Caravan in tow. The last 16 km up on to Mt Terrible is a dirt 4WD track but, with the centre diff locking engaged, we climbed it OK.

Mt Terrible is 10 km south of Jamieson and 1310 metres high. At the top, there is a fire spotter's tower, some communication gear and a high country hut. We set up about 1 km south of the tower.

I set up four bands for the contest - 6 m, 2 m, 70 cm and 23 cm. All bands used Yagis stacked in a Christmas tree arrangement on a 6.5 m length of black pipe using the 4WD as ballast. Rotation was by hand in an Armstrong fashion.

The shack was located in the end of the caravan annex. I used a Kenwood TS-2000X that was interfaced with a PC running the VKCL software to automatically synchronise with the transceiver frequency and band data. All that had to be entered was Call Sign, Number Received and Maidenhead Locator. This made the logging job a lot easier. The microphone was hand held although it would have been easier with a VOX Headset or a Desk Microphone to keep your hands free for data entry.

The caravan and annex was heated with a Cow Cooker Stove that burned on wood. This kept the camp inside dry and warm considering that we had quite a bit of rain outside. I powered the portable station with a 240 Volt Generator, which gave ample power for the lights, transceiver, and PC.

The greatest distance for a contact was made to Mackay Queensland on 6 m. I made a lot of contacts into the Melbourne area. I believe it was a successful weekend considering the weather was no greater than 5 degrees C in the clouds.

I look forward to the next field days and hope to hear you call CQ Contest.

Tim VK5ZT was out again, but with a more restrained approach this time:

I am fortunate to be within easy reach of sites that permit the use of three grid squares working into Adelaide so we set up the wife's Falcon with portable gear again. The Beemer had a bit of a hammering around the pine forests for the foxhunt championships two weeks ago as a last minute vehicle option (again) as a result of an eleventh hour failure of the van (lost a cylinder the night before we were due to pack!) One of these days that van will actually make it to a contest...

I did not want to jam dishes and stuff in the BMW boot so I opted for the roomier Falcon instead. I bolted the tri-band dish to a bracket on the towbar, along with the mount for the verticals. I got some interested looks from vehicles coming up behind me who found themselves staring into the dish! Unfortunately our microwave efforts were a disaster, as explained later.

I started out at the hilltop site I used for the JMMFD. The single tree was perfect to sling up the 6 m antenna. It comprised a wire dipole zip clipped to a nylon cord I threw up into the tree... worked very well. There was a bitter wind blowing and it started raining just after I arrived. All bands from 6 to 23 cm worked well and I racked up a few contacts. 10 GHz was a dead loss - .the current system had never been tried over the distance (around 100 km) and I heard nothing of VK5LZ at the other end. A similar result happened on 3.5 GHz but I was unable to persevere due to heavy rain.

After a couple of hours I moved down the coast about 50 km to a hill overlooking Ardrossan (new grid square). All bands to 23 cm were good into Adelaide, with extra 23 cm signals heard.

This area was windy but sunny and I had better hopes for the microwave



The camp at Mt Terrible

gear - no such luck. When tuning around on 3.5 GHz there were signals all over the place.

It turned out that the hill was the ideal site for a number of commercial installations, which were spraying the area with microwave energy, which my very broad receiver readily brought to my attention! Forgetting the 10 GHz stuff, I tried 5.8 GHz....it turns out that there were a number of sources on the single frequency I had.

They were scattered across the Adelaide plains and I could pick them out as I swept the dish up the coastline - everyone except VK5LZ, that is. Well, I made a number of contacts on the lower bands and was happy with that and moved back north to my tree on the hill after a couple of hours. I could work everyone again as three hours had passed. One last try on 3.5 GHz actually heard VK5LZ but they could not find me, and it rained yet again!

After contacts petered out I headed north towards home, passing within one km of Derek VK5AGZ who was doing a bit of grid hopping himself. I had one last site in mind (new grid square) that was on my way home - the lookout at Lochiel. I rolled in there in darkness much to the surprise of a couple of campers in a van who thought they had a nice isolated spot!

It was the last half hour of my 8-hour stint so I hastily deployed the 6 metre wire antenna...by now looking a lot like a tangled ball of wet string but still with an acceptable SWR! I worked everyone I could hear within 15 minutes but found I could not hear a thing on 23 cm.

I wanted the points for that last grid square so bundled the gear in the car and took off back down Highway One to a hill nearer the city. I went up a muddy dirt track then up another track that would scare goats, to a hilltop. Here, standing on a dirt mound holding the 23 cm beam high above my head I managed to exchange numbers with VK5LZ with a couple of minutes to spare.

VK5AGZ was still lurking about and wanted a contact on 6 m so I rapidly deployed the "ball of string" antenna into an adjacent bush - all of this in pitch blackness using only light from inside the car (left the torch at home).

The SWR was still OK and the radio was happy to dump 100 watts into it but Derek could barely hear me due to a large hill in the way and we could not exchange numbers as my last minute ticked away.

So, there we have it, my first winter field day. I resolved to rebuild all the microwave gear and renew my efforts on the cursed Nissan Nomad. Needless to say, as soon as I got home, she who must be obeyed commanded that I get that junk off her car.....73, Tim VK5ZT

Alan VK3XPD, Mike VK3KH and Peter VK3TPR set themselves up on the side of Arthur's Seat to the south of Melbourne, with all bands covered to 24 GHz. While the lower bands were quite active, the microwave side was fairly quiet. They did achieve contacts into Melbourne and Ballarat on 2.4 GHz and into Melbourne on 10 GHz. They did have quite a spectacular view of the sunset to keep them entertained.

See a colour photo of the equipment and the sunset on next page.

Echoes of Apollo 11 EME

A brief report from Chris VK5MC of his activities over the Echoes of Apollo weekend appears on page 53.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Although there were several winter 'E' openings, they were generally of short duration with signals low in strength and overall a disappointing winter season. Below is a summary of the 'E' openings:

23rd May	VK3 - VK5, VK4 - VK5
24th May	VK4 (Mackay area) - VK5, VK5 - VK6
25th May	VK4 (Far North area) - VK5, VK3 & VK2
2nd June	VK4 (Mid North area) - VK5 & VK2
9th June	ZL3 &4 - VK3 & VK4, ZL2 - VK2 & VK4
13th June	VK4 (Brisbane area) - VK3 & VK7
14th June	VK4 (Mackay area) - VK5 & VK3
(Best day)	VK6 - VK4 & VK5, VK4 (Brisbane area) - VK7 & VK2
22nd June	VK4 (Mackay area) - VK2 & VK3, FK8 Beacon - VK2 & VK4
23rd June	VK2 - VK5
24th June	VK4 - VK5
26th June	VK5 - VK6

Brad VK2QO reports:

May was quiet for me but June has been a lot of fun with M/S and A/E, also some Es. The Es has not been in favour for VK2 but has been good for other states. Only two contacts for June via Es, VK4CZ Scott and VK4MA Paul both on the 14.6.09 (at work when E's are around on other days).

Now for the M/S and A/E in the mornings. VK5RBV, VK5VF, and VK4RGG the only beacons heard in June with some good burns lasting up to 40 sec and up to S2 at times. Contacts were made in CW with Scott VK4CZ, Brian VK4EK, Phil VK4FIL, and Dougal VK4EKA and in CW & SSB with Brian VK5BC.

73 Brad VK2QO

The Atherton beacon on 50.281 CW is now running in test mode and was heard by Adam VK4CP and Grant VK2MAX on 22nd June.

Several stations including Joe VK7JG (Launceston), Brad VK2QO, Scott VK4CZ, Brian VK4QB, Brian VK4EK and Brian VK5BC have all been monitoring for M/S early morning with several contacts being completed. Watch the VKLogger early on Saturday and Sunday mornings.

Interest has also been shown in WSPR (pronounced "whisper") which stands for "Weak Signal Propagation Reporter." This program is designed for sending and receiving low-power transmissions to test propagation paths on the MF and HF bands.

Users with Internet access can watch results in real time at WSPR.net. Several stations have been testing with this software on 6 m with varying success.

Although Doppler shift appears to affect decoding of signals, it is showing promise and could be of assistance as a form of beaconing to indicate band openings. If interested, search for WSPR on the internet and download the free program. As with WSJT you require interfacing between your radio and computer.

Now is a good time to check your station out and carry out any antenna maintenance or upgrade in preparation for the coming new Sunspot cycle and next summer 'E' season.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com .

Digital DX Modes

Rex Moncur VK7MO

New Australian 10 GHz (3 cm) Digital Record

On 23 June Rex VK7MO and Justin VK7TW ventured up northern Tasmania's Mt Barrow and Dave VK3HZ went to Mt Fatigue in Gippsland to attempt a 10 GHz digital contact over a 325 km path.

The mode used was JT65a, which works to around 28 dB below the noise in a normal SSB passband. To achieve this performance, JT65a uses 64 separate tones spaced just 2.9 Hz apart and requires an extremely stable frequency. To meet the stability requirements at 10 GHz both stations used GPS locked transceivers and transverters.

At the Mt Barrow end, transmitter power was 10 watts to a 65 cm diameter dish antenna. The antenna power amplifier and transverter were mounted on the roof of a rock hut on Mt Barrow and remoted a few metres to the transceiver and computer in Rex's car (see picture). Justin was on the roof of the hut adjusting the antenna in azimuth and elevation and Rex down below operating.

At the Mt Fatigue end, seven watts was going into a 45 cm diameter dish antenna. The plan was to leave the radio equipment outside in the cold and operate the laptop from within the car but it was a balmy 18 degrees on the hilltop so the deckchair operating position was adopted.



Alan VK3XPD, Mike VK3KH and Peter VK3TPR caught some lower bands, a little micro and this great sunset from Arthur's Seat.

Almost as soon as the Mt Barrow end was set up SSB signals were copied at up to S6 with very deep and rapid QSB. A change to the digital mode JT65a produced immediate results and a new Australian 10 GHz digital record with signal levels peaking at -2 dB giving around 26 dB to spare.

While the contact and new record was completed in a few minutes, testing continued for around half an hour with the pleasing result that the difference in frequency was less than one 3 Hz bin for the full period. This represents a frequency error for both stations of less than 3 parts in 10 to the 10th or 3 parts in ten thousand million. In the case of the oscillator used at the Mt Barrow end, this was locked to GPS frequency at Rex's home and maintained frequency over some 4 hours driving over the sometimes rough dirt road up the mountain.

A review of radiosonde data from Melbourne Airport showed no evidence of ducting high enough to be useful so the contact can be put down to normal troposcatter and should be repeatable under normal conditions. Given that there was some 26 dB to spare, there is the opportunity to extend this distance significantly in the future and further tests are planned.

FSK441

Welcome to Tim VK2XTT who has joined in the weekend meteor scatter activity and completed his first QSO. Congratulations to Waldis VK1WJ who continues to complete with ZL on just 20 watts.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

ar



Two ends of a 325 k record, Mt Fatigue (VIC) set up is above, Mt Barrow (TAS) below.



Contests

Craig Edwards VK8PDX (ex VK5HRT)
vk8pdx@yahoo.com.au
PO Box 285, Alice Springs NT 0870

Contest Calendar for August — September 2009

August	1	TARA Grid Dip	PSK/RTTY
	1	Waitakere (NZART) Sprint	CW
	1/2	10-10 International QSO Party	SSB
	1/2	North American QSO Party	CW
	8	NZ Boat Anchor	CW/Phone
	8/9	Worked All Europe	CW
	15/16	**Remembrance Day Contest**	**CW/SSB/FM**
	15/16	Russian District Award Contest	CW/SSB
	15/16	Keymen's Club of Japan Contest	CW
	15/16	North American QSO Party	SSB
	29/30	**ALARA Contest**	**CW/SSB**
September	5/6	All Asia Contest	SSB
	12/13	Worked All Europe Contest	SSB
	19	**Westlakes Cup (80 m)**	**Voice**
	19/20	Scandinavian Activity Contest	CW
	26/27	Scandinavian Activity Contest	SSB
	26/27	CQWW RTTY DX Contest	RTTY

Well my big news is that I have moved interstate and north to Alice Springs and changed from VK5HRT to VK8PDX.

As with all interstate moves it takes a lot of time away from the radio but I will still be able to put up a temporary full size dipole on 80 m for the NZART Memorial contest, so hopefully I can make the journey to give our friends from across the Tasman the VK8 multiplier.

I aim to have the 14 MHz monoband beam and multiband vertical with 60 radials all up and running by the end of July in time for IOTA. Remember if you have any comments about your on-air contest experiences then please send them to me at vk8pdx@yahoo.com.au

VK Shires Contest – inaugural event

The dust has settled after the first VK Shires contest which ran in the 1st week of June. A reminder, log entries must be submitted by September 1, 2009 to be eligible for awards.

Submit your electronic log in the Cabrillo format created by all major logging programs. Send via e-mail attachment to contest@vkshires.info Full details are at www.vkshires.info.

No matter how many QSOs you made, I strongly encourage you to send in your entry. With this being the first year, there is nothing more encouraging than to have as many log entries as possible.

One week before this contest, we had sold our home and were packing for our relocation to Alice Springs. Fortunately we were on top of things and so I was able to 'escape' and set up a mini-contest station using tents on the water's edge at a caravan park in the Coorong CO5. Due to the freezing temperatures, I set up a sleeping fort made of pillows, blow up mattress, quilts and blankets in the van – it was like a kids jumping castle every time I got into and out of bed!

The operating tent was a four-person dome with enough room to do the contest, and I strategically put a two-person dome tent in the middle of my radial field to barricade off potential visitors. I was able to set up at the far end of the caravan park away from on-site cabins and only 30 m from the water's edge.

This gave a great take off for my HF9V ground mounted vertical with 60 x 20 m radials which was my 40 m and 80 m antenna and a full size two element Yagi for 20 m with strong arm rotator on a telescopic pole as a portable tower. This had a real field day atmosphere and I had no family or friends responsibilities to worry about – just radio! At 0600 UTC kick off, I started on 20 m but it was slow going with just a few VK and USA stations in the log, so by 0620 I dived into the beehive of VK activity on 40 m.

This was very heartening as the activity was akin to this year's John Moyle Memorial Field Day. Surprisingly 40 m became unfashionable by 0800 UTC and was a ghost town very quickly. So from 0800 to 1400 UTC I played on 80 m, despite the high noise levels the band was very busy.

It was vital to have a copy of the shires list with me to let people who had inadvertently become involved in all the fun know which VK shire abbreviation

they had to use in the exchange. There were times I had to Google the person's town and tell them where they were!

There was not a lot of activity Sunday morning on 80 or 40, but no matter as the DX presented itself all day on 20 m. So it was very enjoyable to pick up VK QSOs interspersed with state-side and the odd European. I had to tear myself away from the 20 m DX late in the contest to go down to 40 m at 0520 UTC to pick up some late new VK shire multipliers.

As I tuned up the band, Laurie VK7ZE was going gangbusters into USA and then Europe on 20 m. Laurie reported having S9 to S9+20 PLI noise for the first 12 hours which made hearing stations on 40 m and 80 m very tough.

Laurie reports: "*Managed to score around 150 or so shires and I think five zones by the time I called it quits just after 1:00 am, on 80 m. Sunday morning 5.30 am - calling relentlessly on 80 and 40 with negligible response, so I decided to try 10, 15 & 20 m. Nothing on 10 or 15 m, kept checking regularly and no signals surfaced for the whole contest. 20 was a different story altogether, how would I describe 20? OUTSTANDING!!! Best propagation I have experienced in years.*"

Laurie's bag of DX consisted of VK, ZL, USA, VE, ZS, GI, S5, I, G, 4X, A6, JY, UA, OD, KH6, Antarctica, UR, XE, CU, PA, OK, KP4, SM, EA, EI, T7, F, GW, DL, GM, OH, ON, 3D2, JA and SP. Being its first year, he had the time consuming task of explaining about the contest and the rules during his pile-ups. As Laurie VK7ZE says "*It was amazing how many overseas stations did not know what CQ zone they operated from, for that matter it was also surprising to see how many Australians didn't know what shire or local council area they lived in. Amalgamation did not help in some cases.*"

Thanks Laurie for your account from the contest, this is the kind of contribution that I welcome from all contesters in VK about their experience. It certainly was an enjoyable 24 hours and I will be looking forward to giving people the AS8 shire in next year's event. The rules are currently being revised to make this event bigger and better for 2010.

IARU HF World Championships

As I write this column it is only a week until the IARU HF World Championships. An unfortunate clash of dates has meant I will not be able to compete. We will be living it up in Townsville that weekend with the family to attend the inaugural V8 Supercar event in the city. There is always next year, I would hate to miss it then when the multitude of WRTC teams compete in 2010.

ALARA contest August 29 — 30

Full details are available at www.alara.org.au

Here are the rules for this month's ALARA contest run by the Australian Ladies Amateur Radio Association. Eligibility: All licensed operators throughout the world are invited to participate. Also open to SWLs.

Object: Participation – YL works everyone, OMs & Clubs work YLs only.

Mode: CW and SSB

Time & Dates: 0600 UTC Saturday August 29 to 1159 UTC Sunday August 30

Bands: 3.5, 7, 14, 21, and 28 MHz. The following are suggested frequencies for easier location of contacts: 3.560 to 3.590, 7.070 to 7.100, 14.250 to 14.280, 21.170 to 21.200, 21.380 to 21.410 and 28.380 to 28.410 MHz.

Operation: Every individual phone or CW contact may be counted. There must be an interval of greater than 1 hour between contacts with any one station on any one band and in the same mode. No net or list operations. No crossmode operations. No crossband operations. All contacts must be made in accordance with operator and station licence regulations.

Procedure: Phone call "CQ ALARA CONTEST" and CW YLs call "CQ TEST ALARA". OMs call "CQ YL"

Exchanges: ALARA member: RS or RST, serial no. starting at 001, ALARA member, name.

YL non-member, OM or Club: RS or RST, serial no. starting at 001, name, and whether a club station. OMs, Clubs & SWLs work YLs only.

Scoring:

Phone: 5 points for ALARA member contacted, 4 points for YL non-member contacted, 3 points for OM or Club station contacted

CW: All contacts made on CW count for double points. OM, SWL, & 5 points for ALARA member logged

CLUB: 4 points for YL non-member logged

Logs: Single log entry. Logs must show date/time UTC, band, mode, callsign worked, report and serial number sent, report & serial number received, name of operator of station worked, whether it is a club station, and points claimed. Sample Log available on website. Logs must be signed and show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible. No photocopies. No logs will be returned. Decision of the Contest Manager will be final, and no correspondence will be entered into.

Logs must be received by the Contest Manager by: 30th September 2009.

Contest Manager: Lesley Smit VK5HLS PO Box 271, Ashton SA 5137 or alaracontest@wia.org.au

Certificates for: top score overall, top score phone only, top score Australian YL CW, top score DX YL, top score ALARA member in each country and VK call area, top score YL non-member in each continent, top score OM in each continent, top score SWL in each continent, top score VK YL Foundation Licence holder, top score overseas YL CW, top score VK Club station.

Trophies will be awarded to the following: top scoring Australian YL, top scoring Foundation Licence ALARA Member.

Club stations: Operators of club stations may use the club call only for contacts, and MUST identify each contact as with a club station. Use of personal callsigns while operating as a club member is not permitted. A club station will be recognized as such whether operators are YL or OM. If the club call is used, the score will be as a club station.

2009 Remembrance Day Contest Rules

0800 UTC Sat15th August to 0759 UTC Sun 16th August

Full Details and History, Peter Harding VK4OD Contest Manager:
http://www.wia.org.au/members/contests/rdcontest/

Purpose:

This contest commemorates the Amateurs who died during World War II and is designed to encourage friendly participation and help improve the operating skills of participants. It is held on the weekend closest to 15 August, the date on which hostilities ceased in the southwest Pacific area.

It is preceded by a short opening address by a **Guest Speaker** transmitted on various WIA frequencies during the 15 minutes prior to the contest. A roll call of amateurs who paid the supreme sacrifice during WWII is read.

A perpetual trophy is awarded annually to the Australian state or territory with the best performance. The name of the winning State or Territory is inscribed on the trophy, and that State or Territory then holds the trophy for 12 months. The winning State or Territory is also given a certificate, as are leading entrants.

Objective:

Amateurs in each VK call area will endeavour to contact amateurs in other VK call areas, ZL and P29 on all bands except WARC bands. On 1.8, 28, and 50 MHz and above, entrants may also contact other amateurs in their own call area.

Contest Period:

0800 UTC Saturday, 15th August 2009 to 0759 UTC Sunday, 16th August, 2009. As a mark of respect, stations are asked to observe 15 minutes of silence prior to the start of the contest, during which the opening ceremony will be broadcast.

Rules:

1. Sections:

(a) High Frequency for operation on bands below 50 MHz;

(b) Very High Frequency for operation on and above 50 MHz;

Operators may enter each section, but separate logs must be submitted for each section and for each Callsign used on that section by the operator.

2. Categories:

(a) Single Operator;

(b) Multi-operator.

Note: In the (Multi-operator Category, many clubs work under this banner, All stations are permitted to enter in **"ONE and ONE ONLY"** of the following sub-Sections:

3. Sub Sections:

(a) Transmitting Phone (FM, SSB);

(b) Transmitting CW (CW); Note: CW in this context means CW only; any other digital modes such as Packet, RTTY, AMTOR, PSK31, etc are **specifically** excluded from the contest.

(c) Transmitting Open (a) and (b);

(d) Receiving (a), (b) or (c).

3.1: WW2 Ex Military Transceivers and Receivers.

The use of these types of equipment are subject to these conditions:

(a) To qualify we require a Photo (most Hams have access to a digital camera) of the equipment they propose to use, and it MUST be equipment as used in WW2, and not post WW2 manufactured equipment.

(b) A declaration with the heading of WW2 Equipment will operate said units within the "ORIGINAL manufacturers specified operating conditions", eg no mods to boost the output power etc. A copy of the preferred Certificate is available on the on the WIA website at: http://www.wia.org.au/members/contests/rdcontest/documents/WW2%20declaration.pdf

(c) As part of Para 2 above the declaration will ask for

1. Make (if known)
2. Power output available
3. Type of Antenna to be used, it should be of those types available in WW2 period.
4. Anticipated modes AM or CW of FM, (as SSB was not available until the fifties)
5. Frequencies they will use (I look for your guidance here)

(d) Scoring will be the same as in Para 13 of these rules

(e) A Certificate with an addition of a area showing the WW2 Category named within.

4. Offshore Eligibiity

All amateurs licensed in Australia, **and not physically within VK/P29/ZL may enter: VK operators outside VK may enter the contest, whether their stations are fixed, portable or mobile. See Rule 16.**

5. No Cross band, internet, Satellite

(a) Cross-band and/or cross-mode contacts are ***not*** permitted.

(b)Operation via any means other than those which use direct radio transmissions is banned. This includes all means such as IRLP or Echolink, which rely on contact via the internet.

(c) Contact via Satellites is also not allowed for scoring purposes.

6. Call

"CQ RD", "CQ CONTEST" or "CQ TEST".

7. Intervals Frequencies

(a) On ***ALL*** bands, stations may be contacted at intervals of not less than ***two*** hours since the previous contact on that band and mode.

(b) No points will be awarded for contacts between stations in the same call area on HF, except on the 160 metre and the 10 metre bands, on which entrants may work stations in the same call area.

(c) On the 10 metre band, contacts may also be made using the FM mode, using simplex only, on frequencies above 29.0 MHz only. This will be considered a different mode for scoring purposes, so an SSB or CW contact could immediately be made with the same station below 29.0 MHz for an additional score.

8. Working stations more than once

(a) On bands ***50 MHz and above***, the same station in any call area may

be worked using any of the modes listed at intervals of not less than *two* hours since the previous contact on that band and mode.

(b) For the VHF category, up to ***three contacts*** may be made with the same station consecutively on each band, but must be made using the different allowable modes of CW, SSB and FM. However, the different modes must be within the frequency ranges stated in the text descriptions of the latest Call Book as 'mode' only.

For example, on the two metre band, RD Contest CW contacts may only be made in the range 144.050 to 144.100 MHz. SSB contacts are restricted to 144.100 to 144.400, while FM contacts must be above 146.000 MHz.

The national simplex calling channels (146.500 MHz on the two metre band), and the frequencies either side thereof, excluding recognised repeater frequencies, are the suggested frequencies. When changing modes, entrants must also change frequency.

9. Single/Multi

(a) Both single and multi-operator entries are permitted. To be eligible as a single operator, one person must perform all operating and logging activities without assistance other than computer logging, using his or her own callsign. More than one person can use the same station and remain a single operator providing that each uses his or her own callsign, submits a separate log under that callsign and does not receive operating or logging assistance in any way other than computer logging during the contest.

(b) Holders of more than one licence or callsign ***MUST*** submit a separate entry for each callsign used.

10 Operating conditions

(a) Multi-operator stations are only allowed one transmitter per band/mode at any one time. Simultaneous transmissions on different bands are permitted. Simultaneous transmissions on the same band but using different modes are permitted. Any large multi-operator stations may find it more convenient to use separate band and/or mode logs.

(b) Automated operation is not permitted. The operator must have physical control of the station for each contact. However CW and voice keyers are permitted, although the use of computers is restricted to logging purposes only.

11. Valid Contacts

(a) For a contact to be valid, a three-digit serial number commencing at 001 and incrementing by one for each successive contact must be exchanged between stations making the contact. (RS/RST reporting is not required, but if given should be an accurate appraisal of the signal).

(b) Separate logs are required for entrants competing in both HF and VHF sections, although all allowable modes can be contained within each log.

12. Repeaters Forbidden

Contacts via repeater, satellite or relay are not permitted for scoring purposes. Contacts may be arranged through a repeater, although contact numbers may not be aired there. Operation on repeater frequencies in simplex is not permitted.

13. Score:

on 160 metres, two points per completed valid contact;

on 23 cm or higher bands, two points per completed valid contact;

on all other bands, one point;

on CW irrespective of band, double points.

all scores obtained between the entrant's local time hours of 0100 and 0600 are doubled. If working into an area where the time is outside those hours, the score is doubled only for the station whose local time is 0100 to 0600 hours.

14. Logs

Logs should be in the format shown below and accompanied by a Summary Sheet showing callsign; name; address; category; sub sections; for multi-operator stations a list of the operators; total claimed score; declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest; signed (postal mail only); date. Please supply a contact telephone number if possible.

15. Separate logs required

Entrants operating on both HF and VHF are required to submit separate logs and summary sheets for both categories. Separate serial numbers for HF and VHF operation.

Logs must be serial numbered sequentially on any band within and below, High Frequency for operation on bands below 50 MHz;

Logs must be serial numbered sequentially on any band within and above, Very High Frequency for operation on and above 50 MHz.

16. Outside Call Area

VK entrants temporarily operating outside their allocated call area, including those outside continental Australia as defined for DXCC, can elect to have their points credited to their home State by making a statement to that effect on their summary sheet(s).

17. Log Submission

(a) Logs can be submitted by electronic mail or postal mail:

By mail, send logs and summary sheets to: RD Contest Manager. Endorse the front of the envelope "Remembrance Day Contest". Peter Harding VK4OD, 40 Centaurus Cres, Regents Park, QLD 4118.

E-mail, PLAIN TEXT logs only may be sent to rdlogs@wia.org.au

(b) Electronic Logging is preferred but is by no means mandatory. Those entrants with a suitable PC may wish to consider it for this year. By using one of these programs, the file that is emailed to me can be imported easily into the scoring database program. Links for these programs are listed below. I have tried and tested them all and with the assistance of all the creators, they have rewritten parts of their program to assist scoring, On completion of the contest you can email the **VKnXXXX.csv**, which is a comma-delimited file format be, which can be imported into our database. *See Software download links note on the Contest section of the WIA web site.*

(c) In all cases, logs must be received by last mail on ***Monday 15th September, 2009. Late entries will not be eligible. Electronically sent logs will be returned with a courtesy note, also snail mail will be returned unopened.***

(d) If you are sending your logs by electronic means, I would recommend that you set the flag to request "confirmation of receipt" and "when the file is read". This way you will receive **two** confirmation messages. If you do not receive either return message please **send me an inquiry mail.** For users of snail mail, send a self addressed envelope with the sample reply form **to request a receipt for your paper log,** which is available at http://www.wia.org.au/contests/rd/Reply%20Form.pdf. HOWEVER in all circumstances the rule as in 17c above WILL STILL APPLY. So get the logs in early.

18. Certificates

Certificates will be awarded to the leading entrants in each **sub-section,** both single and multi-operator; in each State; P2 and ZL. Entrants must make at least 10 contacts to be eligible for awards, unless otherwise ruled by the Contest Manager.

19. Disqualification

Any station observed as departing from the generally accepted codes of operating ethics may be disqualified.

Determination of Winning State or Territory

Scoring will be achieved by taking the total number of logs for each State or Territory, divided by the total number of licences issued in that State or Territory (excluding beacons and repeaters) as published in the WIA Callbook for that year, and multiplying by the total score for that State or Territory. Points can only be considered where a station has submitted a valid log.

Unless otherwise elected by the entrant concerned, the scores of VK0 stations will be credited to VK7, and the scores of VK9 to the mainland call area which is geographically closest. Scores of P2, ZL and SWL stations will not be included in these calculations, although entrants in those areas are eligible for all certificate awards.

Receiving Section Rules

1. This section is open to all SWLs in Australia, Papua New Guinea and New Zealand. ***Licensed operators may enter this section but this will make them ineligible to also compete in the Transmitting sections.***
2. Rules are the same as for the Transmitting Section. The only double points will apply to ALL **received** CW contacts, and contacts **received** between 0100 and 0600 local time.
3. Only completed contacts may be logged, it is not permissible to log a station calling CQ.

Layout of logs:

The log should be in the format shown below whether submitted electronically or via mail. Sample logs are available on the WIA and local website or may be posted on receipt of a mailed request, accompanied by a stamped, self-addressed envelope.

Sample Summary Sheet:

Remembrance Day Contest 2009

Callsign: VK1xxx

Name: Operator's full name

Address: Physical address of contest station

Category: Single or Multiple Operator

Section: HF or VHF

Sub Section:

Transmitting Phone, CW or Open (both)

Total Score: number of points claimed

Declaration:

I hereby certify that I have operated in accordance with the rules and spirit of the Contest.

Note: ***Some software may require you to click on a button as your affirmation of operation according to the rules for this contest.***

Signed: Your signature if log is submitted via mail.

Date: date submitted

Sample Transmitting Log *Remembrance Day Contest 2009*

Callsign: VK1xxx

Category: HF or VHF / Single or Multiple Operator

Section: Transmitting Phone, CW or Open

Time (UTC)	Band (MHz)	Mode	Call	Number Sent	Number Rcvd	Pts
0801	14	CW	VK2QQ	001	002	2
0802	14	SSB	VK6LL	002	001	1
0806	14	SSB	VK5ANW	003	003	1
0808	14	SSB	ZL2AGQ	004	004	1
0811	14	SSB	VK4XX	005	008	1

Sample Receiving Log Name/SWL Number:

Category: HF

Section: Receiving Phone:

Time: (UTC)	Band (MHz)	Mode	Call 1st Op	Call 2Nd Op	Number 1St Op	Number 2Nd Op	Pts
0801	14	SSB	VK1XXX	VK2QQ	001	002	1
0802	14	SSB	VK1XXX	VK6LL	002	001	1
0806	14	SSB	VK5ANW	VK1XXX	001	003	1
0809	14	SSB	VK7AL	VK2PS	007	010	1

The Westlakes Cup
19 September
Schedule and Rules

Full details: http://www.westlakesarc.org.au/contest.htm

Date:
Saturday 19th September 2009. Time: 2030 EST (1030 Z) till 2130 EST (1130 Z)
Band: 3.535 - 3.620 MHz Mode: SSB, DSB, AM

Max Power Limit:
100 Watts Standard and Advanced Licence Holders, 10 Watts Foundation Licence Holders.

Rules:
All Stations shall call 'CQ Westlakes Cup'. Exchange for Points shall be the operator's name and a signal report:
After the contact is made and reports exchanged the station that had called 'CQ' must QSY at least 5 kHz from the frequency before calling again. There will be no 'sitting' on a frequency and working a 'pile up'. You must QSY after each contact is made.

Valid Contacts:
Only VK or Special Prefix (AX, VI) Australian stations may be worked. The contest may expand to ZL, P2 and other South Pacific neighbours in the future.

Points A:
There will be two BONUS stations operating in the contest. The BONUS stations are the stations that hold the Cup from the previous year's contest. The stations that are the BONUS stations will be worth 1 (one point) for the QSO plus 3 (three) bonus points and may be worked twice in the contest, once every half hour, if you can find the mischievous little devils. This year (2009), the BONUS stations will be VK7VH/BONUS and VK2FRKO/BONUS.

Points B:
Amateur radio clubs and WIA affiliated stations are encouraged to take part. Every amateur radio club that takes part in the contest shall be worth 1 (one point) for the QSO plus 1 (one bonus point). Every amateur radio club taking part shall sign with the call eg. VK2XXX/CLUB. WIA station calls such as VK2WI, VK4WIT, VK2BWI etc. shall qualify under the same scoring system as amateur radio clubs and must identify themselves with a /CLUB after the callsign eg. VK3WIA/CLUB. Amateur radio club stations and WIA club stations may be worked only once in the Contest hour.

Points C:
Every station that does not fall into the BONUS categories listed above shall be worth 1 (one point) per QSO and shall be worked only once during the Contest.

Points D:
SWLs shall be able to claim the same points as per transmitting stations. For example if an SWL hears a BONUS station they may claim 1 point plus 3 Bonus points. If they hear a Radio Club or WIA Club Station they can claim 1 (one point) for the QSO plus 1 (one Bonus point). They must record the callsign and information of both stations in the QSO.

Contest Procedure:
At 2015 EST (1015 Z) on 3.585 MHz +/- QRM, the BONUS station shall make an announcement outlining the basic rules of the Contest. For 2009 the station making the Announcement will be VK7VH. At the end of the basic outlining of the rules of the Contest VK7VH may pass the microphone to VK2FRKO to issue a word of encouragement and greeting to Contest participants. If there are any last minute questions to be asked then questions will be answered at this stage.

At two minutes prior to the beginning of the contest, the BONUS station shall make an announcement to the affect that the contest shall begin in two minutes. At the completion of the contest, the BONUS station shall call in all stations that wish to declare their scores for the contest. If, for any reason the BONUS station cannot perform these functions, the Westlakes Amateur Radio Club Contest Manager or a deputy will do the job.

The call-in shall be on 3.585 MHz +/- QRM and shall start from the lowest scoring stations, eg 10 points, up to the top scorers in the contest. During this process, additional stations may be seconded from the group on frequency to take call backs from any region which the BONUS station thinks his signal may not be covering well. Such station/s may receive a special certificate in recognition of their efforts.

The object of this 'Check In' after the contest is that stations may get an 'idea' of the contest results on the same night as the contest takes place although confirmed places will only be made known after the 'Contest Manager' has received and checked the logs.

Contest Logs:
An excellent logging programme has been produced by Mike VK3AVV and is available by typing VKCL into your Google Search Engine and follow the prompts in the VK Contest Logger.
Logs submitted in other formats shall contain the following information:

Cover Sheet:
Call Sign: Name of Licensee, Address of Licensee, E-Mail Address of Licensee, (optional) Points claimed including BONUS points.

Log Details:
Time: Local or 'Z', call worked, signal strength of station worked, and name of operator: Signal strength given to station worked.

Declaration:
'I declare that I have operated in accordance with the rules and spirit of the contest and in compliance with my licence conditions'.

Awards:
Inscribed cups shall be awarded to the stations with the highest points attained. If two or more scores are the same, the winner will be decided by the first person that contacted a BONUS station. There will be one cup awarded in the Advanced and Standard Licence Category (100 Watts) and one in the Foundation Licence Category (10 Watts). The cups shall be inscribed with the callsign name and details of the highest points scorer and shall be retained by the contest winners.

The stations that gain possession of the cups shall become the BONUS stations for the following year's contest. The Contest Manager retains the right to decide to change the rules of the next year's contest. Certificates shall be awarded to the first, second and third place getters in each section (Advanced/Standard, Foundation and SWL) of the contest. Additional certificates may be issued to those who, in the opinion of the Contest Manager of Westlakes Amateur Radio Club have contributed, maintained or attained prominence in any particular area of expertise or excellence in the contest.

Logs should be sent to:
The Contest Manager, Westlakes Amateur Radio Club P.O. Box 3001 TERALBA NSW 2284. Logs via Internet may be sent to the following E-Mail address: *contestmanger@westlakesarc.org.au*

The closing date for the receipt of logs will be Friday 30th October 2009.

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Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The last meeting was another interesting one. We were addressed by Dean VK5LB who has experimented with many wire antennas over the years as he lives on a country property where there is room to put antennas up in the air.

He spoke of the virtues and disadvantages of the different antennas. The vee-beam performs very well where there is space for it. He compared centre-fed and unequal-sided dipoles, and the old faithful G5RV and concluded that this old favourite performed as well as either of the others and was more tolerant of the ends of the antenna drooping because of lack of space on suburban blocks.

While it is marvellous to have a beam that can be turned around to tune in the faint signal many very good contacts can be made with a G5RV fitted into our suburban block. Certainly aim for something better, but get a start with a wire antenna.

On 5th July AHARS was invited to the ETSA Museum where three very competent guides showed us their treasures and told us something of the history of our electricity supply in South Australia.

When we were looking at the old appliances there were lots of comments like "We had one of those" and "I remember that style".

The Museum has collected many of the early models of stoves, washing machines and radios and even has a genuine addressograph (with a plate making machine) that was about to be thrown on the dump. While we are glad to have moved with the times it is great to have been able to save from destruction the white goods of which our parents and grand-parents were so proud.

In another section we saw some of the very accurate instruments against which our domestic meters were compared so we could be sure we were only being billed for as much electricity as we used.

We also saw some photos including one of an early linesman replacing globes (and shuddered at the sight of a ladder from the back of a truck, held in place by another ladder sitting on the ground – the OH&S would shake in their shoes to see it today!!).

For those who went to the Museum it was a very good day, those who missed it missed a special treat. Thanks to a couple of our members and to the other volunteer staff of the Museum for arranging the day.

AHARS meet regularly on the third Thursday of each month and have a range of interesting speakers. Any visitors to VK5 are welcome. Please contact John VK5EMI or David VK5KC (formerly AMK) QTHR the callbook.

Don't forget the Buy and Sell on Sunday September 13th at Goodwood Community Hall

Full details page 54

The mid-year meeting of the Lower Murray Radio Club

As usual this takes the form of a dinner to which the President of AHARS and his XYL are invited (LMRC is affiliated with AHARS) in Murray Bridge.

Young and older members enjoyed a pleasant time. A photo shows the group this year.

The LMRC meets each week on a casual basis in the clubrooms provided by the local Lions Club at the Sports Ground. The Lions' provide similar clubrooms for many of the Murray Bridge hobby groups which is much appreciated.

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Jenny VK5FJAY, Jenny VK5ANW, Kevin VK5AKZ and Gerard VK5ZQV in front of a display board of domestic meters.



The assembled LMRC members with partners.

AMSAT

David Giles VK5DG

Book review and two new satellites

This month's feature article is a review of the ARRL Satellite Handbook. Also there are details on two new satellites in orbit, and a report on a very interesting project to come. But first a message from the AMSAT-VK group.

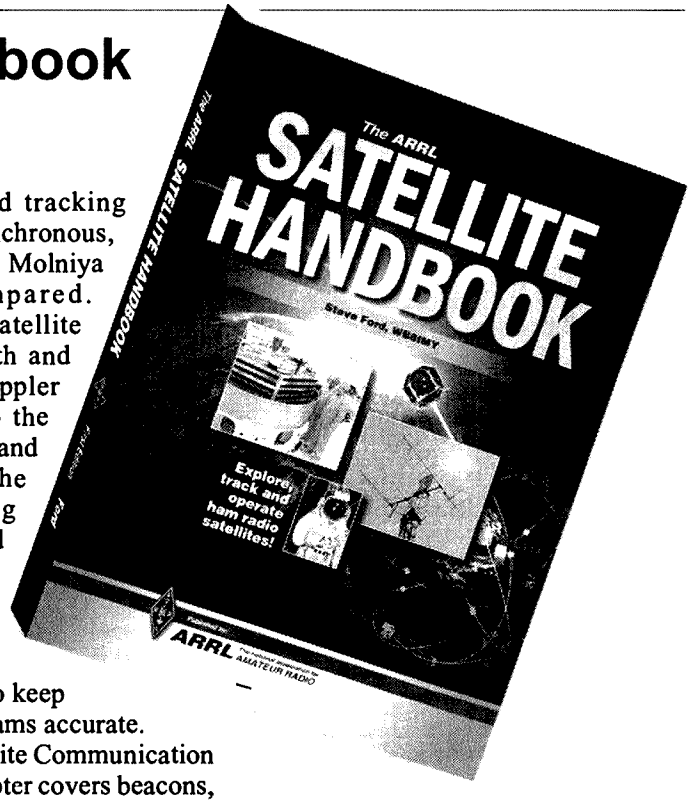
AMSAT-VK

In an email to the AMSAT-VK group, group coordinator Paul VK2TXT announced that they were discontinuing the HF net. Participation had been very low and it was felt that the net was no longer viable.

The other nets on EchoLink are still operating. I have updated the information box to reflect this and added VK5RSC and VK7AX. Please email me at vk5dg@amsat.org if there are any corrections needed.

The ARRL Satellite Handbook

by Steve Ford WB8IMY



In 1984 the first edition of "The Satellite Experimenters Handbook" was published. Written by Dr. Martin Davidoff K2UBC, it quickly became THE reference book for amateur satellite operators.

A new satellite reference book has recently appeared. "The ARRL Satellite Handbook" has been written by Steve Ford WB8IMY. Steve is also the editor of QST and Publications Manager of the ARRL. He has also written other ARRL publications on the digital modes. This review is of the first edition from October 2008.

The ARRL handbook is divided into six chapters and two appendices. The chapters have been written and compiled by Steve and the appendices were written by Dr. Martin Davidoff.

The book is aimed at the beginner and has a practical approach to setting up a ground station and using the satellites. The 200 pages contain many photos and diagrams.

Chapter 1: A Brief History of Amateur Radio Satellites. This chapter has excerpts from "Space Satellites from the World's Garage—The Story of AMSAT" by Keith Baker KB1SF and Dick Jansson KD1K. It covers the OSCAR satellites, the Russian RS series and amateur radio operations during manned spaceflight. From OSCAR I to DO-64, all OSCARS are discussed.

Chapter 2: Satellite Orbits and Tracking. This chapter describes different types of orbits, how they appear from your ground station, Doppler shift and tracking software. Sun-synchronous, dawn-to-dusk, and Molniya orbits are compared. Descriptions of satellite footprints, azimuth and elevation and Doppler shift are given so the reader can understand the outputs of the various tracking programs described in the second half of the chapter. The final section looks at Keplerian elements needed to keep the tracking programs accurate.

Chapter 3: Satellite Communication Systems. This chapter covers beacons, command links and analogue and digital transponders. The different types of telemetry beacons are looked at and show how they have progressed from simple CW telemetry to 9600 baud packet. Command links give a brief look at the role of the command stations. The transponders section discusses bent-pipe, linear, and digital transponders.

Chapter 4: Your Satellite Ground Station. This chapter discusses antennas, rotators, pre-amplifiers, transverters, and transceivers. Antennas from simple omnidirectional types to cross-polarised Yagis with fully computer controlled rotators are discussed. Some typical station designs are given.

Chapter 5: Satellite Operating. The first section is an in depth use of the 'FM' birds; AO-51, AO-27, SO-50 and the ISS. Also covered is AO-16, which was active at the time of publication. The next section looks at the linear satellites; AO-7, FO-29, VO-52 and DO-64 (which was usable as a linear transponder when published). The focus is on using VO-52. The third section is on digital satellites. APRS is the main topic with a brief section on using WiSP with GO-32 and CO-65.

Chapter 6: Amateur Satellite Projects. This chapter contains project articles from the ARRL Handbook, ARRL Antenna Book, QST and QEX magazines. Eight of the projects are antennas ranging from omnidirectional Quadrifilar Helix and Lindenblad to 2.4

GHz horns and dish feeds. The other two projects are a tracking interface to go between a computer and antenna controller and a simple Az-El rotator using two rotators.

Appendix A: Satellite Orbits. Written by Dr. Martin Davidoff, this chapter delves into the theory of satellite orbits. Those of you who have read the earlier editions of Davidoff's books will recognise the substance as it is mostly a copy. Unfortunately none of the illustrations have been presented in this edition so I found it rather hard going.

Appendix B: Other Satellite Subsystems: Structural, Environmental, Power, Energy, Attitude, Propulsion and Control. A long title to a chapter which describes what makes up a satellite. There is much more to a satellite than some solar panels, batteries, and radio circuits. The appendix discusses what goes into the design needed to make a satellite.

For example the Environmental Control section focuses on how the satellite's temperature is regulated in the vacuum of space. The satellite goes from direct sunlight where it is heated on one side at 1380 Watts/m^2, to the cold of the Earth's shadow. Add to that the problems of getting heat away from the transmitter section, keeping the electronics and batteries from freezing, overheating or sudden temperature changes, to keep the satellite operating as long as possible and you can appreciate the effort that goes into the design and engineering. An example is given for AO-7.

Like appendix A, this appendix is largely a copy from Davidoff's last edition.

But is this handbook the perfect addition for your shack? Unfortunately, it is not perfect. I found numerous little mistakes from the front cover (it is actually a picture of FO-20 not FO-29) through to the last appendix. Appendix A has the most mistakes with many formulae incorrectly typeset.

There are no particularly serious mistakes except the section of chapter 5 on using linear transponders. The operating procedures presented are not considered good practice by experienced operators and are not used with computer controlled tuning.

For those of you who have the book, please compare this chapter with the article "The one true rule for Doppler tuning" which can be found at http://www.amsat.org/amsat/features/one_true_rule.html

Overall the ARRL Satellite Handbook is a very good guide to amateur satellites. It comprehensively covers all aspects of working the satellites and is easy enough for the beginner. It is available from the WIA Bookshop for $48.00 plus postage (WIA member price).

PharmaSat and CP-6

Astute readers of this column will have noticed in last month's satellite review two very new satellites PharmaSat and CP-6. They were launched on 19/5/09 with the U.S. Military satellite Tacsat-3. The rocket used was made up from a Minuteman intercontinental ballistic missile and a Pegasus orbiter. Here is a

AMSAT-VK

AMSAT Co-ordinator
Paul Paradigm VK2TXT
email: coordinator@amsat-vk.org

Group Moderator
Judy Williams VK2TJU,
email: secretary@amsat-vk.org

Website:
www.amsat-vk.org

Group site:
group.amsat-vk.org

About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.
AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net
The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP
Maddens Plains repeater on 146.850 MHz
VK2RIS
Saddleback repeater on 146.975 MHz
VK2RBT
Mt Boyne Repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne,
438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

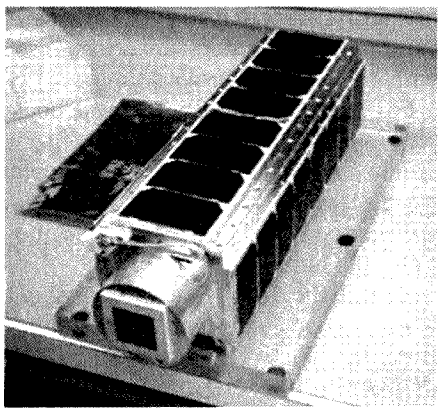
In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.
Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.



bit more detail on each.

PharmaSat

PharmaSat is a 5 kg spacecraft 'about the size of a loaf of bread'. It was developed by NASA and the Santa Clara University. PharmaSat follows on from the successful GeneSat-1 launched in 2006.

It contains a biological laboratory that has experiments with yeast cells. Data transmitted from PharmaSat includes temperature and pressure (to measure the yeast's environment) and an optical sensor to determine the health and state of the yeast. The yeast are fed sugars and an anti-fungal agent at three dosages.

The science team reported that the results obtained showed PharmaSat's experiment to be a success. PharmaSat is designed to allow biological experiments in microgravity without the need to use the space shuttle or ISS.

After two days in space the power and telemetry systems were confirmed and the experiment was started. Results so far indicate that conditions are nominal and that the yeast are growing.

The downlink frequency has shifted. The original frequency of 437.465 MHz has had to be revised as very few packets were being decoded by the ground stations. The beacon frequency is now between 437.457 MHz and 437.461 MHz. Amateurs in Australia, Brazil, Germany, Japan, Netherlands and the U.S. have successfully decoded and sent packets to the control stations.

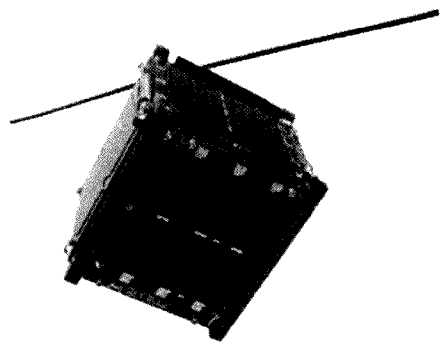
As of 15/06/09, the 70 cm beacon has been turned off so engineers can look at problems with the S-band system. The main website is at http://www.pharmasat.org A log of the main events in PharmaSat's life is at http://pharmasat.engr.scu.edu/OperationsLog.html

CP-6

Built by the California Polytechnic State University at San Luis Obispo, CP-6 is a cubesat whose mission is to demonstrate an attitude control system using magnetorquers. In other words, it adjusts its position by creating a magnetic field that reacts against the Earth's magnetic field to turn the satellite.

CP-6 sends telemetry on 437.365 MHz at 1200 baud. Unusually it transmits a CW identifier ("CP6"), then the packet frame using FSK every 60 seconds. For the best success in reception set your receiver to LSB and tune the CW for a pitch of 1200 Hz. The packet tones will then be at the right frequencies. CP-6 has two transmitters, COMM A and COMM B. COMM A is frequency stable but COMM B tends to wobble. Both are on the same nominal frequency.

Calpoly has packet decoding software



that will take data from a KISS TNC or a soundcard and the MixW program. Versions are available for Windows, Mac and Linux.

The software decodes the data and sends it via the internet to Calpoly. Download the software and install as per the instructions. It will ask for registration details if you have done so on the website. Make sure your TLEs are up to date in the file kepler.dat.

The program gives details of the satellite's position and times of the next pass. Mike Rupprecht DK3WN has details on his site on how to set up MixW for decoding. I have tried using a KISS TNC with little success. Colin VK5HI told me that a software setup using MixW works better. CP-6 is spinning rapidly and suffers from QSB.

Two other small satellites were also launched. Aerocube-3 does not use amateur frequencies. HawkSat-1 does have a downlink on 70 cm but is only activated over its ground station in the USA.

The website for CP-6 is at http://polysat.calpoly.edu/

Suitsat-2

Gould Smith WA4SXM, AMSAT VP of User Services recently released the latest report of progress on SuitSat-2. SuitSat-1 (AO-54) was a Russian Orlan EVA spacesuit on board the ISS that had gone out of service.

In 2005, amateurs had installed a 2 m beacon transmitting various types of messages into the helmet of the spacesuit. It was 'kicked out' of the ISS in February 2006. Unfortunately there was a malfunction of the antenna or transmitter and signals were very weak. But the experiment was successful in many ways and much was learnt for the next version.

SuitSat-2 improves on SuitSat-1 by adding a Software Defined Transponder, solar panels, and cameras. The helmet contains the antennas, radio, cameras, and safety switches. The suit body contains the control processor, up to four experiments and the battery. The solar panels are attached to the spacesuit's legs.

The software defined transponder receives on 70 cm and transmits on 2 m. The bandplan includes a BPSK beacon, a 16 kHz wide mode U/v linear transponder, a CW beacon, and an FM beacon for voice messages, 1k2 packet telemetry and SSTV. Pictures from the four cameras are processed on-board to determine the best ones, then converted to ROBOT-36 format to be transmitted by the FM SSTV beacon.

It is hoped SuitSat-2 will be ready by the end of 2009 for a 2010 launch. It is expected that SuitSat-2 will be in orbit for up to 6 months. Gould's report shows the various modules under construction and testing, displays of the transponder in use and even a SSTV picture taken in the lab. More information can be found at www.suitsat2.org

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News From

VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

It has been a busy couple of months of amateur radio in VK7 as you will see below and elsewhere in this magazine: Echocs of Apollo and a 325 km 3 cm Digital Record. Other events included the Southern Winter Hamfest on 6/7 June at the Sorell Men's Shed. The weekend saw construction, raffles, VK7SMS award station, homebrew competition (won by Corey VK7FCFC), displays of new and pre-loved equipment. Thanks to Ken VK7DY and Wendy VK7FWJS and all at the Men's Shed for a great weekend.

Repeater News

Brian VK7RR has worked miracles with VK7RTC 70 cm following the power amplifier being damaged. Brian has also raised the CTCSS level so it is high enough on both receive and transmit for anyone monitoring it. It sometimes has inter-modulation problems due to nearby commercial systems that use the same CTCSS tone. Plans are also underway to replace the original 26 year old antenna. Thanks Brian.

Tony VK7AX also lets us know that the licences for the new repeater VK7RTV at Gawler have come through and frequencies will be advised as they are brought into operation. The 6 m repeater will be the first and then the 2 m once the modifications to the diplexer are complete. Thanks Tony.

North West Tasmanian Amateur TeleVision Group

June 6 was a meeting at QTH of Ivan VK7XL and XYL Esme with guest speaker Barry VK7FR who discussed his experiences as a former ABC News Presenter in Papua New Guinea and many states of Australia including Tasmania for many years. The presentation even included a 'Bloopers' segment which was enjoyed by all. Thanks Barry.

Northern Tasmania Amateur Radio Club

For the Museums on the Air event on June 20-21, Gavin VK7VTX/VK7FLI was operating from the Furneaux Historical Research Association Museum at Emita on Flinders Island (IOTA awards OC-195). QSL cards go VK7VTX, care of Gavin Barnes, Lady Barron Post Office, Flinders Island 7255. NTARC is considering incorporation and draft rules are available to members on their website. There has also been much DX activity from Norm VK7AC using a switchable four square antenna utilising those now famous squid poles.

Cradle Coast Amateur Radio Club (CCARC) – Formerly NWTARIG

At a special general meeting on May 30, NWTARIG passed motions to change their name and incorporate. The club also welcomed new members, Scott and Kelly Wilson who are aspiring Foundation licensees. CCARC meeting formats were also decided with monthly meetings and every second one being a social meeting. The meeting venue is the Penguin Lions club rooms, 19 Ironcliffe Road, Penguin. The CCARC website can be found at: http://www.my-x15.net/ccarc

June 20 saw a large number of the North West Radio and Experimenters Social Group tour the Wynyard Aero Club. Some were even treated to joy-flights around the area. Thanks to the Wynyard Aero club and Eric VK7FEJE.

Radio and Electronics Assoc. of Southern Tasmania

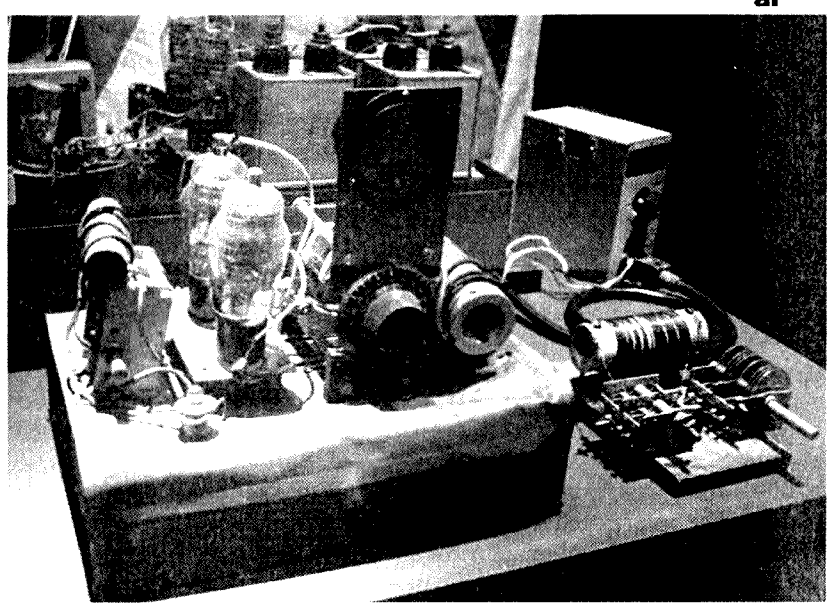
Congratulations and welcome to the bands to Thomas van Geytenbeek VK7FTOM, Robin Smith VK7FRSA and James Cooper who were all successful Foundation Licensees in our last Foundation licence session and assessment.

REAST's July presentation was by the very funny Harvey VK7TED, starting with an outline of the many digital modes available to the amateur. Harvey tackled the Global ALE High Frequency Network. He has set up his radio to scan the various digital frequencies, beacon, listen and log those stations that are heard in the network. Harvey used two laptops connected at the sound card interfaces to demonstrate the handshaking and some of the functionality. Very interesting, thanks Harvey. The network uses freeware software by Charles Brain G4GUO and is a full Mil-Spec Automatic Link Establishment operation using HF SSB or ham radio transceivers.

The REAST ATV Experimenters nights have had a focus over the last month on both Software Defined Radio and the 40th Anniversary of the moon landing. Many historic videos have been screened of the event.

In the June 2009 edition of this magazine I featured the story of "Winnie the War Winner" for ANZAC Day. Recently, I was fortunate enough to visit the Australian War Memorial in Canberra where the original Winnie is on display along with the story of its creation. This is a fascinating piece of wartime radio history and well worth a look the next time you are in Canberra.

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The original "Winnie the War Winner" in the Australian War Memorial,

DX - NEWS & VIEWS.

John BazleyVK4OQ,
E-Mail: john.bazley@bigpond.com

Conditions are still not improving as predicted last year and there certainly has been no shortage of opinions!

But it is very interesting to see the amount of DX that is continually worked, admittedly mainly on the lower end of the HF Spectrum. It is also interesting to see the openings that were possible above 20 metres when we had a slight (short-lived) rise in the SFI.

As recently as 29th May 2009, an international panel of experts, led by NOAA and sponsored by NASA, released a new prediction for the next solar cycle. They predict Solar Cycle 24 will peak in May 2013 with a below-average number of sunspots.

"In recent months, however, the sun has begun to show timorous signs of life. Small sunspots and "proto-sunspots" are popping up with increasing frequency. Enormous currents of plasma on the sun's surface ("zonal flows") are gaining strength and slowly drifting toward the sun's equator. Radio astronomers have detected a tiny but significant uptick in solar radio emissions. All these things are precursors of an awakening Solar Cycle 24 and form the basis for the panel's new, almost unanimous forecast. If our prediction is correct, Solar Cycle 24 will have a peak sunspot number of 90, the lowest of any cycle since 1928 when Solar Cycle 16 peaked at 78, says panel chairman Doug Biesecker of the NOAA Space Weather Prediction Centre."

I particularly liked the final comment, "*Go ahead and mark your calendar for May 2013, but use a pencil.*"

The full report is available at (http://science.nasa.gov/headlines/y2009/29may_noaaprediction.htm) and makes interesting reading.

A more recent paper titled "**Mystery of the Missing Sunspots, Solved?**" at http://science.nasa.gov/headlines/y2009/17jun_jetstream.htm again this makes very interesting reading for it offers a theoretical explanation for the delay of the commencement of the new solar cycle.

So what have we to look forward to in the coming weeks?

Peter ET3BN, who also holds the call DM2BBN, will be in **Addis Ababa, Ethiopia** for the next few years, QRV on CW and SSB. For 80 metres he has a delta loop, for 30 metres, 17 metres and 12 metres a two-element Yagi. For the other HF bands a 3 element Yagi. At the moment he has no antennas for 160 metres, 80 metres or 40 metres. QSL to his Ethiopian address, Dr. Peter Haferkorn, P.O. Box 150194, Addis Ababa, ETHIOPIA.

The **Vienna International Amateur Radio Club (4U1VIC)** will be active with special callsigns this year. From July to December, to celebrate 30 years of the Vienna International Centre building look for 4U30VIC (that is 4U Three Zero VIC). For the purpose of DXCC all QSOs with these stations as well as 4U1VIC count for Austria (OE). For the CQ DX Marathon this is a separate country (entity). QSL via 4U1VIC.

Per LA5OPA will be operating from **Ambergris Cay** (NA-073) between July 26th and August 12th mainly on 20 m SSB and PSK31 signing V31NP. QSL direct or via the bureau.

David GI4UM is heading for Johannesburg on the 28th July and returning home on the 15th August. During this time he will be active as either 3DA0DJ or 3DA0SS from the International Scout Camp at **Manzini, Swaziland.**

Jim ND9M is expecting to return to **Diego Garcia** for another four month assignment starting in mid-August. He will be operating as VQ9JC and will apply for the special call VQ99JC, "*for use during a two-week period around the CQ WW CW Test in November*".

Wojciech SP9PT reports that a group of Polish radio amateurs, SP3CYY, SP9PT and SP9-31029, along with FO5QB will be on from **Tubuai in the Austral Islands, Hiva in the Marquesas** October 16-22. They will concentrate on lower bands and working Europe. Other parts of the world will not be ignored. They plan on being on CW, SSB, RTTY and maybe PSK31 on all the higher bands too, if propagation makes it worthwhile. The participants are paying all the costs and no sponsors are being accepted, so "We are going there for our own pleasure with our own money." The 160 m skyhook will be a vertical with two elevated radials or 12 on the ground. 80 m will be a square of four 18 m high verticals each with one elevated radial or 12 on the ground. Separation of the verticals will be 20.5 m. On 40 there will be two phased verticals. For 30, the same as 40 or a four-square. 20 - 10 m will have a hex beam and a vertical. They hope to have a receiving beverage directed toward Europe. Rigs will be a pair of K2s and an IC-7000, three 600 W amplifiers, and logging will be on three laptop computers. Look for them on 1827 and 1842, 3505 and 3795, 7005, 7075 and 7040, 10105 and 10143, 14025, 14190 and 14080, 18075, 18145 and 18103, 21025, 21295 and 21080, 24895, 24940 and 24923, and 28025, 28490 and 28080. QSL via SP9PT: Wojciech Klosok, P.O. Box 131, 44-200 Rybnik, Poland. http://fo2009sp.pl/

Newly-licensed hams in **Portugal, the Azores and Madeira** will have new licence classes and corresponding prefixes starting 1st June this year. The CEPT licences will start with CT7 for Portugal, CT8 for the Azores and CT9 for Madeira. The CEPT novice ticket will have a CS7 prefix for Portugal, CS8 for the Azores and CS9 for Madeira. These are also called New Class 1 and New Class 2. A third, New Class 3, will have CR7, CR8 and CR9 prefixes for the three different Portuguese DXCC entities. Old callsigns will be kept as they are, e.g. CU1 to CU9 for the Azores. CR1, CR2 and CQ8 will be for special event and contest callsigns.

Phil F5PHW is heading to **Tahiti (OC-046), French Polynesia** for a two year stay starting in August 2009. Plans are to be QRV as FO/F5PHW on CW, RTTY and SSB (sometimes) on 3.5

through 28 MHz. He will try to obtain a full FO5 call if possible. Phil will be staying in a small house near the local airport and will have an HF6 and dipole up and possibly a three element beam. He has a Web page at http://f5phw.chez.com QSL via F8BPN either direct or via the bureau. Phil will also post his logs to LOTW.

Gerard F2JD is back to the **Philippines** for at least five months. He hopes to be able to renew his previous licence (DU1/G0SHN) and to visit a few island groups during his stay. QSL via F6AJA.

Ron WB2GAI is celebrating his Golden Jubilee in amateur radio and will be active again as SV9/WB2GAI/p from **Crete** from 21st August to the 5th October. He will operate CW on 80-17 metres. QSL via bureau.

The dates for the PG5M Pacific DXpedition are September 6th until the 27th, when he will be active from three different DXCC entities. Firstly, September 6th and 7th, **Fiji, OC-016;** then **Tuvalu, OC-015**, September 8th until the 14th. Again, Fiji September 15th and 16th. Next, September 17th until the 23rd from **Kiribati, Tarawa, OC-017.** Finally, back to Fiji September 24th and 27th. The requested callsigns for the three QTHs are T2G, T30G and 3D2G. Gerben describes this as an "ultra light solo DXpedition," and will be CW only. QSL bureau or direct via his home call, PG5M. For direct, enclose at least 2 USD for return postage.

Special thanks to the authors of *The Daily DX (W3UR), 425 DX News (I1JQJ), Science@NASA, OPDXBulletin and QRZ.DX* for information in this month's DX News & Views. Interested readers can obtain, from W3UR, a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

ar

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
vk7rh@wia.org.au

Iran jams, Twitter spreads, Jackson swamps

I am really looking forward to Spring to get away from the cold weather, as I have not been monitoring as much as usual. I am still finding it very interesting between 7100 and 7200 kHz.

Most of the broadcasters have departed but there are a few holdouts that show no inclination to depart and leave it to amateurs to thoroughly enjoy. The Chinese provincial broadcaster in Inner Mongolia is still there on 7105 and also putting out very weak spurs 10 kHz either side. China and presumably Taiwan are still locked on 7185 almost around the clock.

In the last week of June, I noticed that a Laotian station re-appeared after a break on 7145. It is audible around 1130 but does finish around 1300. However it is swamped by the sidebands of The Voice of Korea from Pyongyang on 7140. Laos is also very rarely heard on 6130 but that channel is heavily used by other broadcasters in our local evening hours. Both channels are relays from a domestic FM channel, hence the sporadic nature of its shortwave output.

As you all must be aware, Iran had a presidential election in mid-June. This was preceded by a major address by President Obama in Cairo. Extensively covered live by many broadcasting organisations, Obama's speech was regarded as highly influential especially in Islamic countries such as Iran.

Just ten days later, the Iranians held a presidential election and as the elections results quickly became public, the opposition candidate and his supporters cried foul. Huge spontaneous demonstrations broke out throughout the nation and beyond.

The Iranians quickly tried to jam both satellite TV and shortwave broadcasts and curtailed the reporting activities of the international press. A respected BBC journalist John Leyne was expelled. However the demonstrators were able to disseminate what was happening using the Internet with Twitter and Facebook when Tehran prevented the domestic and international media from reporting inside Iran.

Naturally major international broadcasters quickly revamped their shortwave output to Iran in both Farsi and English. The authorities in Tehran were particularly scathing of the British, alleging they were attempting to destabilise the regime. That is why they mainly jammed the BBC Persian service on both TV and radio. The jamming was so intense that other legitimate satellite users were forced to find alternative satellites to use.

The Iranian crisis ended with a whimper as the authorities eventually gained control. International interest also waned as another event in North America quickly dominated the news, relegating the news in Iran to the back pages. And what was that event? The unexpected death of Michael Jackson in California. This rapidly took over and pushed out everything. In my opinion it was not news nor earth-shattering.

That is all for now. Do not forget you can email me your news and comments to vk7rh@wia.org.au.

Robin Harwood VK7RH. **ar**

Echoes of Apollo in VK5

Chris Skeer VK5MC

'The GS-15 PA has landed'. 'Moon-working' on EoA weekend, Chris VK5MC reports on another maiden voyage

It was a fun time, my first activity weekend with my new dish and a new GS-15 PA working for me. I was very surprised at some of the reports that I received on 1296 MHz.

26 June 29, 2009 OZ4MM heard, OZ6OL (55/55), VK3UM (55/55). G3LTF (54/54), SV3AAF heard, JA4BLC (549/559).

ES5PC was heard at moon set but not contacted.

27 June K2DH (569/449), W1O (O/O), W5JGE (549/559), W5J (57/56), VE7BBG (O/O), IK3COJ (559/559), SP6JLW (569/559), OH2DG (569/559), JA8ERE (569/449), HB9MOON (55/55) spent some time talking to some children at the Zurich end of the QSO, G4CCH (55/56), SM6FHZ (559/449), HB9SV (569/559).

28 June VE6TA (579/549), W1M (58/57), K0C (57/56), VK3UM (55/55), W5J (579/559), RK3WWF (559/449) could not get down to moonset as the wind was gusting quite high so I parked the dish for safe keeping.

I had to send QRZ quite a few times not because the signals were weak, mainly because I and the rest of the visitors present were a little rusty on the CW, it can only improve.

It is great to be back on EME once again. **ar**

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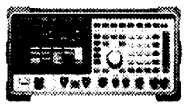
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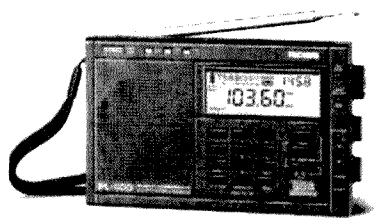
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The WIA offers one year and five year memberships for **Full Member $75 ($356), Overseas Member $85 ($403) and Concession Member - Pensioner $70 ($332)**, and one year memberships for **Concession Member - Student $70 and Family Member $30.**

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Broadcast details

VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 4339.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15. Tuesday 2100 local VK7RMD NW 146.625.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.180, 145.400 IRLP 6800 Katherine and 146.900 Darwin. Sunday 2000 local 145.400 IRLP 6800 Katherine.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.



EME on three milliwatts!

From page 23

The PI9CAM team using a 25 metre dish completed quickly with us at .10 milliwatts giving us -22 dB and again at three milliwatts with signal levels of -26 dB. An attempt at one milliwatt was not successful. Never-the-less with a three milliwatt completion we were "over the moon!".

Other stations copied on SSB were VE3KEP, 4/1; W5J, 5/8; N6JMC, 5/8; VK5MC, 5/6; KF6JBP, 5/7; SP6JLW, 5/6; N6BDE, 5/8 and RD3DA at -5 on JT65.

We also took many hours of video that will be cut into ATV presentations in the near future.

We acknowledge the support of the University of Tasmania and Dr Jim Lovell in providing access to the dish and especially the efforts of the site technician, Eric Baynes VK7BB, in making this a very successful exercise which allowed us to explore the limits of QRP EME.

ar



Mt Pleasant dish at night.

'SSB Fun event'

From page 24

The Moon, that big bounce target, is so far away that 98% of the power leaving an Earth-based antenna is lost; only 2% actually hits the Moon. Then only 6.5% of that power is reflected and then 98% of that is lost getting back. A quick calculation (2% of 6.5% of 2%), gives a very small return signal indeed.

To add to the difficulty the Moon is a moving target half a degree wide. The dish gain at high microwave frequencies makes tracking a challenge in itself, but that is all another story...



At right is the VK3UM 8.6 metre dish with Doug VK3UM and Max VK2ARZ giving a bit of size relativity.

Below is the scene at HB9MOON during the exchange between two Swiss lasses and "the man in the Moon" AKA Doug VK3UM.



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Conquering Kosciusko with a Yaesu FT-857D

Getting started on 136 kHz

Part 2 by Drew Diamond VK3XU



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Our Cover this month

Working the high point of radio in Australia. Compton VK2HRX on 2 metres, with Taylor VK2FTEC as rotator, operating at 2229 metres altitude from Mt Kosciusko. But they were not alone on a very busy Easter weekend.



Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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Editorial

Peter Freeman VK3KAI

A wild windy day

One benefit of being Editor is that I can submit my editorial quite late in the production process. All things work related are still full on, so I had little inspiration about what I would write for September.

I needed to take a day off work to attend a medical appointment in Melbourne's eastern suburbs. The drive from Churchill started out well, but as I progressed down the highway the wind speed increased. The radio weather reports were warning of very high winds and of various incidents of damage.

After seeing the doctor, I took the opportunity to drop in to the WIA office to pick up some material for PubCom that had arrived by mail and to have a short chat with the staff.

It was time for some lunch and I joined the group that meet weekly at the Knox Club, thanks to a heads up from Robert VK3DN. There was lots of interesting discussion, ranging from radio topics to the joys of following the instructions given by an in-car GPS navigation system. The lunch was much more enjoyable than I would have had if I had not joined them – thanks everyone.

After a couple of shopping stops, I headed home later in the afternoon. The weather was still rather wild, but less fierce than earlier. Apart from the usual traffic issues, the return trip was uneventful.

Given the radio news reports of wind damage, I decided to have a quick look in the back yard as soon as I arrived home, just on dark. In the dull light, I noticed a branch from the neighbour's tree had fallen into my yard, but without causing any damage. My short mast – a six metre length of aluminium fixed at ground level and at the top of the house – obviously had a big enough array mounted on it: the mast had snapped at the top bracing point. Oh well, it was put up over ten years ago as a "temporary" measure when I wanted to become active from home on 2.4 GHz.

On the mast were a mid-sized "grid-pack" dish (ex-Pay TV service) for 2.4 GHz, a 10 element 70 cm Yagi and a 5 element 2 m Yagi, with both Yagis mounted for vertical polarisation. The dish is now far from parabolic, a write-off.

The 70 cm Yagi is now only five elements – the boom snapped at the mast-boom attachment point. The two metre Yagi will still be usable after straightening a couple of elements and replacing the front director, which was broken in the fall. The antennas were on an azimuth and elevation rotator system.

So I will need to think about how to erect a new mast. I will also need to consider what replacement antennas I will need...

Offence taken

Earlier in the week I received a letter from a reader in WA. Whilst I have his permission to use the letter, I will not identify the writer.

Our VK6 correspondent took offence at a small comment made by Robin VK7RH in his August column:

"..... event in North America quickly dominated the news, relegating the news in Iran to the back pages. And what was that event? The unexpected death of Michael Jackson in California. This rapidly took over and pushed out everything. In my opinion it was not news nor earth-shattering."

I respect the opinions of both Robin and our VK6 reader. Robin simply stated some facts and expressed his opinion about the way the media dropped many news issues and gave a large amount of attention to Mr Jackson's death.

The way I read the comment both then and now was that it was primarily a comment on the behaviour of the media. Our VK6 reader considers that Robin's remarks were "insensitive". I can appreciate that many might agree with this view. But perhaps all might reflect on the entire situation and both Robin's comment and my interpretation? I do apologise for any offence taken, on behalf of myself as Editor and for Robin (who has not yet had a chance to comment on the letter).

73
Peter VK3KAI

ar

Michael Owen VK3KI

What about WICEN?

In the July 2009 Amateur Radio Phil Wait wrote the Comment under the heading "Amateur Radio and Emergency and Community Services".

He outlined the WIA Board's plan to provide two competency levels for radio amateurs engaging in emergency or community service communications, pointing out that without appropriate competencies to meet concerns about health and safety in emergency situations, the amateurs' skills were unlikely to be fully utilised. The first level would be a basic skill and the second level would require an amateur qualification and would be directed to the provision of communications technology.

The WIA Board believes that the Victorian bushfire experience has highlighted an area where amateur radio can play a useful and universal role, somewhat different from the traditional amateur equipment based message handling role of WICEN. It is clear that the manpower resources of the emergency service organisations are likely to be stretched to breaking point during a protracted emergency event and that suitably trained and qualified amateur radio operators, who are able to operate non-amateur emergency services communications systems, provide a valuable back-up resource that serves the broader community.

By training and accrediting a pool of operators to a level at least sufficient to satisfy mandatory safety and occupational health and safety requirements; and in emergency services operating procedures, the WIA can assist by ensuring amateur operators are available to provide that critical assistance in times of need.

Such a qualification is equally important in another situation. Sometimes it is the amateur who happens to be in a particular place at a time following a catastrophe and before the emergency services and their communications equipment can be deployed. The amateur who may not be interested in participating on a regular basis in a WICEN organisation will nonetheless be better equipped to provide that first response assistance with the qualifications we envisage.

But all of that has led to a number of questions, particularly the question "What about WICEN?"

In fact, the Board when it decided to adopt Fred Swainston's recommendations as described by Phil, also addressed the question "What about WICEN?"

But what is WICEN?

WICEN ("Wireless Institute Civil Emergency Network") are today groups that have grown out from under the umbrella of the WIA in the past in response to their own local or regional circumstances and needs.

In some parts of Australia, WICEN does not exist in any meaningful way. In other parts WICEN is a group that has developed strong and effective relationships with local or regional emergency service organisations and local authorities. In some cases the groups have become community service focussed groups, rather than emergency communication focussed groups.

Today WICEN is a very diverse collection of organisations and groups, generally separate legal entities and all legally independent from the WIA even though they use the name.

Some WICEN groups are affiliated clubs of the WIA, others are not.

Whether or not a particular WICEN organisation supports the competencies that will be offered is very much a matter for it, having regard to the services it supports and their requirements. Certainly, we would expect that many will want to be involved in acquiring the competencies that many already have as well as have an input as to what should be included, particularly in the second level of competency.

What is clear is that in the diversity of groups we generically refer to as WICEN there exists a body of experience, skills and equipment that is unique, very valuable and must be retained.

What is not clear is what should be the role of the WIA so far as the WICEN groups are concerned.

We need to take into account that since the ITU World Radiocommunication Conference in 2003 the administrations of the world have been encouraged to use the resource of amateur radio internationally for emergency communications. The International Amateur Radio Union is working to better develop amateur radio's skills to satisfy that need. As the Australian IARU society the WIA has a role in that aspect of emergency communications.

What should be the role of the WIA so far as the existing WICEN groups are concerned is not so clear. The one thing that the WIA should not do is to attempt to dictate its view of how WICEN organisations should be structured or how they should operate. But does it have a coordinating role? Should it provide the means by which the existing and new WICEN organisations can meet and agree on the fundamentals that will facilitate intercommunication and personnel exchange?

The WIA Board takes all of this very seriously. Three of its directors, Phil Wait, Ewan McLeod and Peter Young form the Emergency Communications Group, with Phil taking the overall coordinating role.

That Group has been given two tasks, the task of implementing (with the help of the WIA Nominated RTO Trainsafe), the two levels of competencies I have referred to and the task of identifying the current position of the various existing amateur emergency communications organisations and to identify, in the different parts of Australia, the roles that would meet the needs of emergency organisations, and on the basis of the facts as they find them, define a structure and role that will support a better amateur emergency communications resource.

No, the WIA is not going to write-off WICEN. But it does want to know what it can most usefully do to support the diversity of what we often, too simplistically, refer to as WICEN.

If you have an opinion or can provide information or in any way contribute, please let our Emergency Communications Group know. The most important question, in this context, is what should be the role of the WIA?

You can write to them care of the national office, or better, send your contribution by email to secretary@wia.org.au

Help Phil and his team to really answer the question "What about WICEN?"

ar

WIA News

2009 Region 3 ARDF Championships Cancelled

Yoshio Arisaka JA1HQG, Chairman of the IARU Region 3 ARDF Committee has released the following statement:

"On behalf of the IARU Region 3 ARDF Committee, I truly find it regrettable, but I must make an announcement that the IARU Region 3 ARDF Championships planned to be held in 2009 have to be cancelled due to the following reasons.

1. After careful consideration, the host society, the Radio Amateur Society of Thailand, has made a decision that it would be prudent to cancel the championships planned to be held in Thailand from October 29 to November 3, 2009 because of unexpected possible political problems.

2. There is not enough time to make all the arrangements to hold the Championships in another country in the Asia Pacific Region in 2009.

We apologize for any inconvenience that this may cause."

ARRL was correct about BPL Interference

In 2004, the ARRL requested the FCC release internal staff studies showing support for its decision to allow the operation of BPL devices under modified FCC part 15 rules. The FCC released some information, but large and critical sections were redacted (withheld) from public release. The ARRL appealed the FCC redaction in the US Court of Appeals, where the FCC was subsequently found to have deliberately withheld information contrary to its conclusions. The ARRL cited the redacted information during the appeal proceedings.

Noel Ferguson Awarded Life Membership of the Sunraysia Radio Group Inc.

On Sunday 19th July the Sunraysia Radio Group Incorporated held its AGM in the Pioneer room at the Working Mans Club, Mildura. The meeting was attended by members of the Sunraysia Radio Group and visitors from the Swan Hill Radio Club.

A highlight was conferring of life membership on Noel Ferguson VK3FI for his significant contribution to the club over a number of years. Noel first become secretary of the club around 1995, bringing ideas and strategies that led to significant growth to the club. Noel was one of the first to volunteer as a WIA Assessor under the new examination system and, after purchasing a data projector, began running Foundation courses from his shack, bringing many new people into the hobby and into the club. Commendation letters were read from WIA President Michael Owen VK3KI, President of ARV Jim Linton VK3PC and the WIA's RTO Fred Swainston VK3DAC.

Following the formal AGM three guest speakers addressed the meeting. WIA Director Robert Broomhead VK3DN spoke of recent activities of the WIA, including the Foundation and upgrade licence programs, the WIA bookshop, the development of the WIA website and the work that the Institute has undertaken on behalf of the ACMA. Robert presented to the Sunraysia Radio Group Treasurer Norm MacMillan VK3XCI the 2008 WIA Club Grant cheque for $500 awarded to the club to assist with the upgrade of the Swan Hill repeater system.

Ray Naughton VK3ATN from ATN Antennas told some amazing stories with useful information on what can be achieved with well designed and very large antenna systems, including Moon bounce.

Then Tony Hutchison VK5ZAI spoke of his recent trip to the USA, visiting the homes of many well known hams, a visit to the Dayton convention and a tour of the facilities at NASA's Johnston Space centre.

The afternoon concluded with the presentation of the Max Folie Achievement Award to Peter Norris VK3JUG. The Max Folie award is an award designed to encourage involvement in club activities.

Gippsland Gate Radio & Electronics Club Hamfest

The WIA participated in the Gippsland Gate Radio and Electronics Club Hamfest held at Cranbourne on Saturday 18 July 2009.

President Michael Owen VK3KI, Secretary Geoff Atkinson VK3AFA and Director Peter Young VK3MV were present on the morning and met and spoke with the many amateurs who came past the WIA trading table. Many took advantage of the opportunity to purchase books from the WIA bookshop as well as merchandise items such as shirts, caps and badges.

WICEN Victoria Recognised

On Saturday 18 July 2009 WIA President Michael Owen VK3KI assisted by WIA Director Peter Young VK3MV attended the AGM of WICEN (Vic.) Inc., held at the rooms of the Moorabbin and District Amateur Radio Club and presented two President's Commendations that had been announced at the WIA's Annual General Meeting earlier this year.

One Commendation was presented to Peter Weeks VK3YZP in recognition of his work in WICEN over many years and the other was presented to Mark Dods VK3XMU WICEN State Secretary in recognition of the work of WICEN in the Victorian fires and his contribution to WICEN.

WIA Director visits RSGB

During a recent business trip to London, WIA Director Robert Broomhead VK3DN met with President Colin Thomas G3PSM and General Manager of the RSGB Peter Kirby G0TWW.

They discussed matters relating to the services provided by both our radio societies and the promotion of membership to our societies, exchanging ideas and material for the ongoing marketing and promotion of Amateur Radio.

Robert reports that one thing that did become apparent during the discussion was the firm commitment that UK amateurs have to membership of their society, with the RSGB having over 50% of all licensed amateurs as members. In Australia the WIA has approximately 4,600 members of around 15,000 licensed radio amateurs.

Robert also visited Bletchley Park the home of the code breakers during the Second World War.

Today Bletchley Park has become a popular tourist attraction, and the RSGB have a public display of amateur radio at the site. The RSGB HQ Station GB3RS operates from the display area.

The RSGB has announced that it will move its "public headquarters" (library, radio station, museum and bookshop) to Bletchley Park in a purpose built facility which is scheduled to be constructed by April 2010.

continued on inside front cover

A phasing type transceiver for 144 MHz - Part 2

Dale Hughes VK1DSH

The previous part (Part 1) of the article described the general design principles of the transceiver and the details of the RF and AF sections of the unit. This instalment will describe the remaining circuit modules and provide construction and adjustment information.

Microcontroller and DDS circuitry

(See Figure 10). A microcontroller provides the supervisory and control functions necessary to operate various parts of the transceiver:

- The Direct Digital Synthesiser (DDS) which generates the 28 MHz local oscillator.
- Transmit/receive sequencing and 'roger beep'.
- Liquid crystal display and front panel controls.
- Battery voltage monitor.
- Frequency memories.

Considering the DDS first; the AD-9851 has its own 30 MHz oscillator. This is internally multiplied to 180 MHz and used as the main DDS clock.

This implies a useful upper limit of about 60 MHz for the DDS output. The microcontroller controls the DDS through a fast serial connection and the frequency is set by sending a 40 bit string which contains the binary representation of the wanted frequency as well as some control information.

The control string is sent every time the frequency is changed; either by rotating the shaft encoder or by pressing the recall memory button.

The output from the DDS passes through several filters to remove spurious frequency components; a 70 MHz low pass filter removes any of the 180 MHz clock and higher order alias frequency components and the resulting sine wave is passed to a high speed comparator which generates a logic level square wave.

This signal is then passed through a 28 MHz double tuned circuit to produce a sine wave which feeds the first mixer.

Tuning is by means of a low cost shaft encoder with 24 pulses per revolution. The output pulses are debounced using a pair of Schmidt triggers (74HC14). The microcontroller reads the pulses and updates an up/down counter which holds the frequency information which is also shown on the liquid crystal display.

Two step rates have been programmed: 1 kHz/step and 10 Hz/step (this is easily changed if required). Frequencies can be stored in the local memory by selecting which memory and then holding down the memory Read/Write button for two seconds. The frequency is then written into EEPROM for later recall.

Two memories are provided in the current version of the software, but many more could be available if required.

Other front panel controls and connections allow the user to lock the dial frequency, select the tuning step or connect a Morse key for CW. When operating CW, the microcontroller scans the key input and turns the local audio oscillator on and off in sympathy with the key presses. This produces a carrier on the wanted output frequency. The same process generates the 'roger beep'.

A stable reference supply of 5.120 volts is required for the analogue to digital converter which is used to measure the battery voltage. In my case, this is provided by a REF-02 chip which is mounted on the separate regulator PCB. Another option would be to use the more readily available LM336-5 reference diode.

So long as you can generate a stable reference voltage of 5.120 volts, you should not encounter any difficulty with this stage. The reference supply is connected to the microcontroller by a short screened cable.

A separate three-terminal 5 volt regulator provides the supply for the microcontroller, DDS and display.

Transmit/receive switching occurs in two ways: when the PTT button is pressed or released separate pulses are supplied to the latching relays on the main audio processing and first mixer boards. Brief pulses are supplied which drive the relays through switching transistors. After the lines are pulsed, they remain quiescent. The other line toggles according to the wanted state and is high (~ +5V) for transmit and low (~ 0V) for receive. This line controls the main antenna and power amplifier relay via a Darlington transistor mounted on the power regulator PCB.

Extensive filtering and screening ensures that no high frequency 'hash' from the microcontroller or DC-DC converter is heard in the receiver. Screens were made from un-etched PCB material and all supply and control lines were passed through feed-through capacitors. Control lines were also run in miniature coaxial cable so that they could not radiate any noise.

Power and control circuitry

(See Figure 11). A number of different supply voltages are required for various parts of the circuitry.

Plus and minus 12 volts is required for most of the op-amp circuitry and this is generated by a commercial DC-DC converter recovered from junked equipment. The unit used is a Cossel ZW10 1212 unit and it supplies +/- 12 V @ 450 mA for the op-amp circuitry. Additional filtering of the DC-DC convertor output was added to eliminate power supply 'hash'.

The additional components were mounted on a section of printed circuit board which was soldered to the top of the converter box. This may not be required if other converters are used.

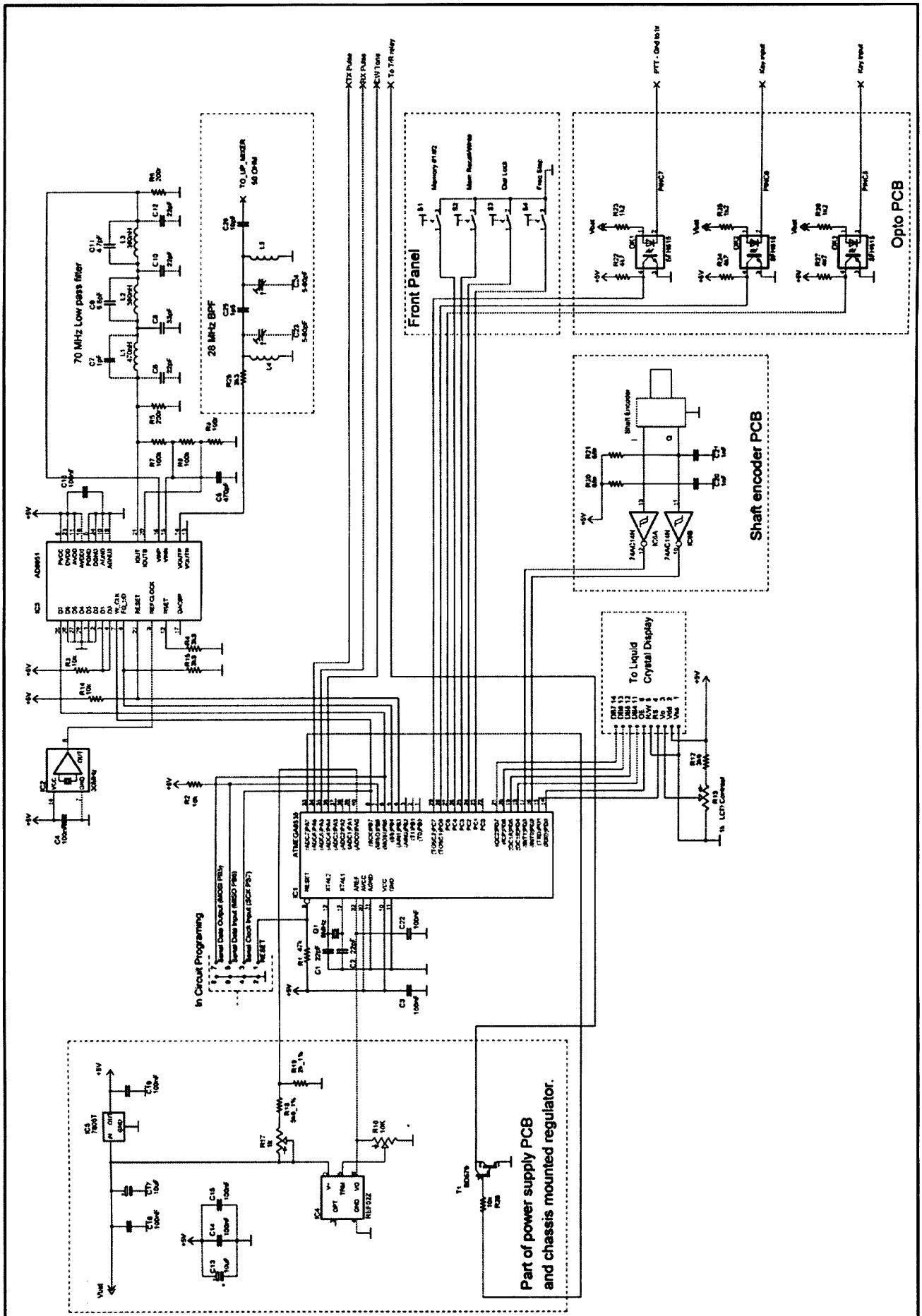


Figure 10: 28 MHz DDS and microcontroller board. The microcontroller and DDS are mounted on an etched PCB, as is the power supply board. The other small boards use Vero board to mount the components. Inductors L4 and L5 are 10 turns on Amidon T50-6 toroids. The other inductors are 0805 surface mount parts. For the rest of the components, a mixture of SMD and leaded components were used.

A number of three-terminal regulators generate five and eight volts for logic and audio circuitry; these are mounted on the chassis which then acts as a heat sink.

Polarity protection is provided by a relay which can only operate when the applied voltage is of the correct polarity as it is powered via a diode.

Construction information

As already discussed, most of the circuitry is built on a number of printed circuit boards. These boards are mounted inside a homemade aluminium enclosure and it's rather cramped inside the box when all of the modules are installed. The various boards are screened from each other by screen made from un-etched printed circuit board and it's better (and easier) to include the screening in the first place than to add it later. All of the signal cables are run in miniature screen coaxial cable.

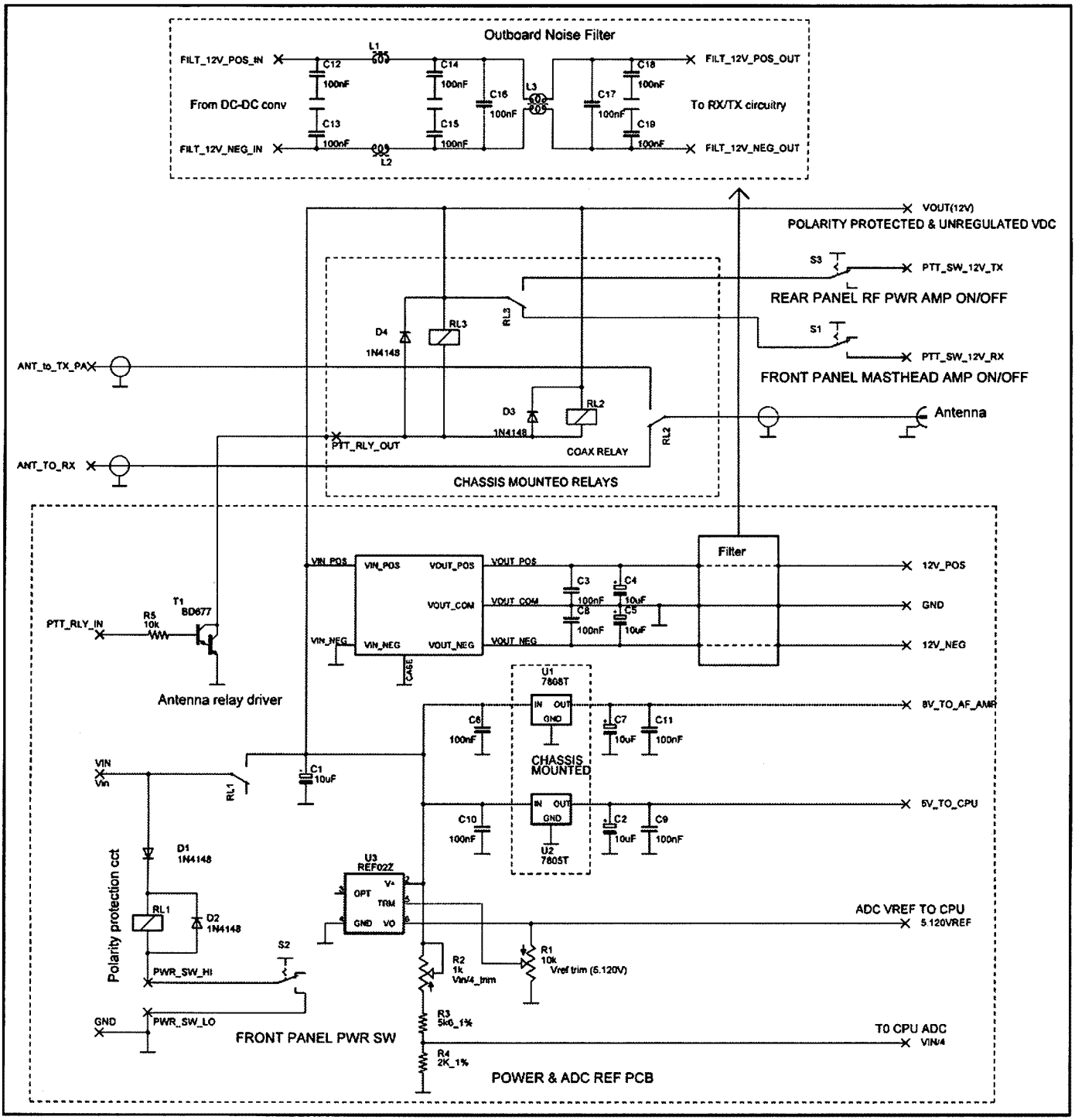


Figure 11: Power supply and control circuitry. L1, L2 and L3 are as many turns as will fit on a 29 mm ferrite sleeve core; Jaycar part number LF1260. The filter circuitry may not be required if the DC-DC converter does not emit any RFI. The three terminal regulators are mounted on the main chassis which acts as a convenient heat sink. Again, as with all of the other sections of the transceiver, the builder has a lot of freedom to experiment and use other parts that may be on hand. A number of adjustments are required on this board; the ADC reference voltage needs to be trimmed to 5.120 V DC using R1 and the battery voltage monitor trimmed to Vbat/4 using R2.

Software

The software for the transceiver is written in assembler code using the Atmel Studio4 development environment. The software is readily modified for operation at other frequencies.

Adjustments

If good quality components are used and sufficient attention is made to matching of components, no adjustment of the audio quadrature network will be required.

The first adjustment is to set the 116 MHz oscillator to the correct frequency by adjusting the inductance in the drain of the oscillator FET. A frequency counter or accurately calibrated receiver can be used to set the frequency. Following the frequency adjustment, the RF quadrature network and transmit and receive amplitude balance controls must be adjusted. These adjustments are somewhat interactive and an iterative approach is required.

Several methods can be used and it is instructive to try them. With an oscilloscope, the constructor can observe Lissajou figures and measure the phase angle directly as shown in Figure 12. The performance of the RF network is easily seen if a stable signal is injected at, say 116.001 MHz (assuming the crystal is at 116.000 MHz) giving a 1 kHz output from the second mixers. If the amplified I & Q signals are connected to the X & Y inputs of the oscilloscope something resembling a circle should be seen. The variable capacitors of the RF phasing network can be adjusted to give the best circle – indicating that the amplitude and phase adjustments are correct. At this point it is best to listen to the opposite sideband by switching the input frequency to 115.999 MHz. If all is well, the amplitude of this signal will be considerably less than the previous signal; by adjusting the receive amplitude balance control it should be possible to completely null out the signal. Adjustment of the diplexer inductors will also have a small effect, particularly at the higher audio frequencies.

The process for adjusting the transmitter is similar, except that as the RF quadrature network is already adjusted for the best phase difference, the only adjustments are the transmit amplitude balance and microphone gain controls. Audio drive should be adjusted to maximise 'clean' RF output, that is, with minimum noise and distortion. The sideband suppression can be measured

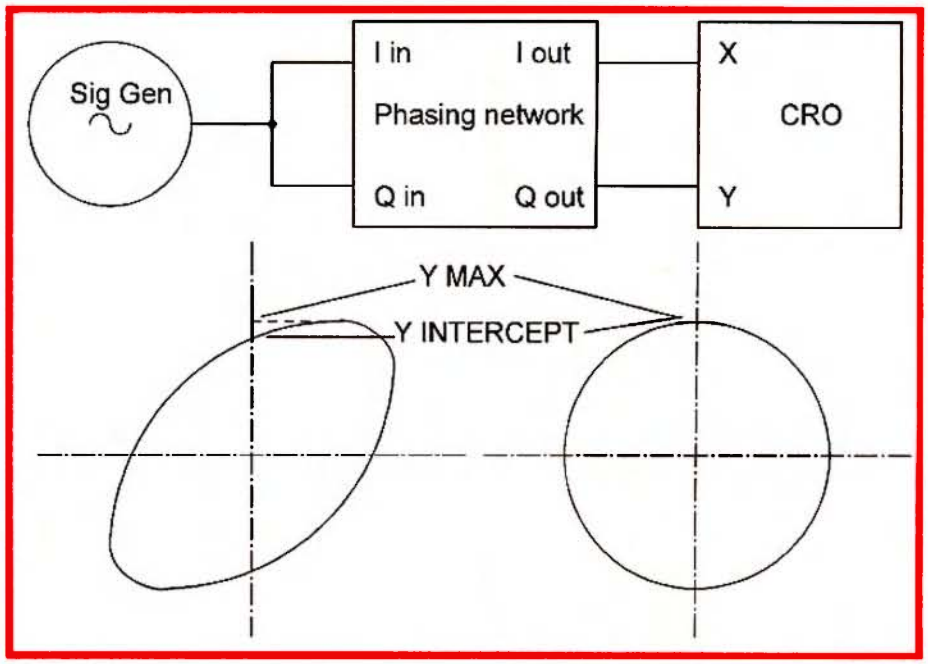


Figure 12: Method of checking quadrature network performance. In the case of the audio phasing network the signal generator outputs an audio frequency in the range of 300 Hz to 3 kHz. In the case of the RF network, the input is the 116 MHz input with the signal generator set to 116.001 MHz (assuming the local oscillator is 116.000 MHz) and the I & Q outputs are then taken from the amplifier outputs. In both cases the oscilloscope will show the phase relationship between the two outputs and the phase difference (θ) can be calculated using:

$$\sin\theta = \frac{Y\,\text{int}}{Y\,\text{max}}$$

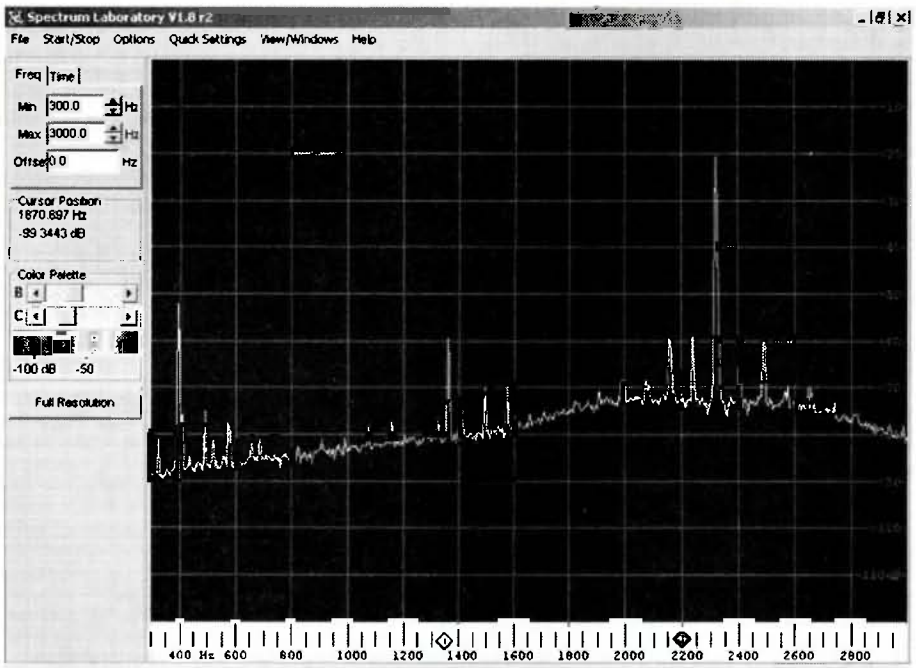


Figure 13: PC audio spectrum analyser measurement of carrier and sideband suppression. The spectra were recorded from the output of a receiver with the receive frequency slightly offset from the transmitter; this allows the upper, lower sidebands and carrier to be seen. A modulating frequency of approximately 950 Hz (and some 50 Hz hum...) was used. The carrier is the peak at 1350 Hz; the upper sideband is at 2300 Hz and the lower sideband is at 400 Hz. It can be seen that the carrier is approximately 40 db below the upper sideband; the lower sideband is approximately 32 dB below the upper sideband. Noise and distortion products can be seen around the various peaks, but are well below the level of the upper sideband. On air signal quality reports have been favourable.

using another receiver and switching between USB and LSB while making the balance adjustment. Careful adjustment should suppress the unwanted sideband by at least 35 dB. Note that unless the receivers AGC can be switched off, this method might give confusing results.

Accurate measurements can be made using a spectrum analyser if one is available; however it is just as good to use a receiver and a PC with a sound card and software like 'Spectrum lab' (see Reference 4 for details). The audio output of the receiver can be displayed in the frequency domain while the phase and amplitude adjustments are made. It is quite a treat to watch (as well as hear) the unwanted sideband suppression change as the adjustments are made. Figure 13 shows a transmitter spectrum recorded in this way.

The RF power amplifier is initially best adjusted for maximum power output using a suitable signal generator. Further adjustments can be made when the transceiver is complete, at which time the PA can be adjusted to give the maximum power consistent with highest signal quality. The PA stage has shown instability and appears quite robust.

The only other adjustments are to set the analog to digital converter reference voltage to exactly 5.120 volts and the battery voltage divider to give the correct battery voltage display. Adjustment of the sidetone volume, in both receive and transmit modes, is done by changing resistor values.

Component and supplier information

The RM6 pot cores used for the diplexer inductors might be difficult to source; however based on my experience with the prototype transceiver, the ability to adjust the inductance is not critical. So it is likely that using selected fixed inductors would work just as well. All of the other parts: op-amps, transistors, passive components and so on are generally available through the usual suppliers and substitutions can be made for most op-amps to suit what types are available.

The RF power transistors may be the most difficult item to locate. A useful source of RF components is ex-commercial two-way radios that are generally available at field days or through clubs and other amateurs. The 2N5944 and 2N6080 transistors were junk box items and are available new - but are very expensive! Experiment with other devices that may be more readily available. Suggested suppliers are shown in the table below.

Concludes at foot of next page

Item	Suggested supplier
TUF-1 mixers, MMIC's, AD-9851 DDS. J-310 JFET's. Shaft encoder. Assorted surface mount parts and a wide range of other components.	Mini-kits www.minikits.com.au
TUF-2 mixers and other Mini-circuits components e.g. MMICs.	Clarke & Severn Electronics www.clarke.com.au
Amidon cores.	TTS Systems www.ttssystems.com.au
Miniature and surface mount inductors, capacitors etc. A wide range of components. REF-02 voltage reference.	Farnell Australia http://au.farnell.com/
Op-amps, transistors, general components.	Futurlec www.futurlec.com.au
Trimmer capacitors & general components. RF transistors.	Rockby Electronics www.rockby.com.au
DC-DC converters.	Powerbox Australia www.powerbox.com.au

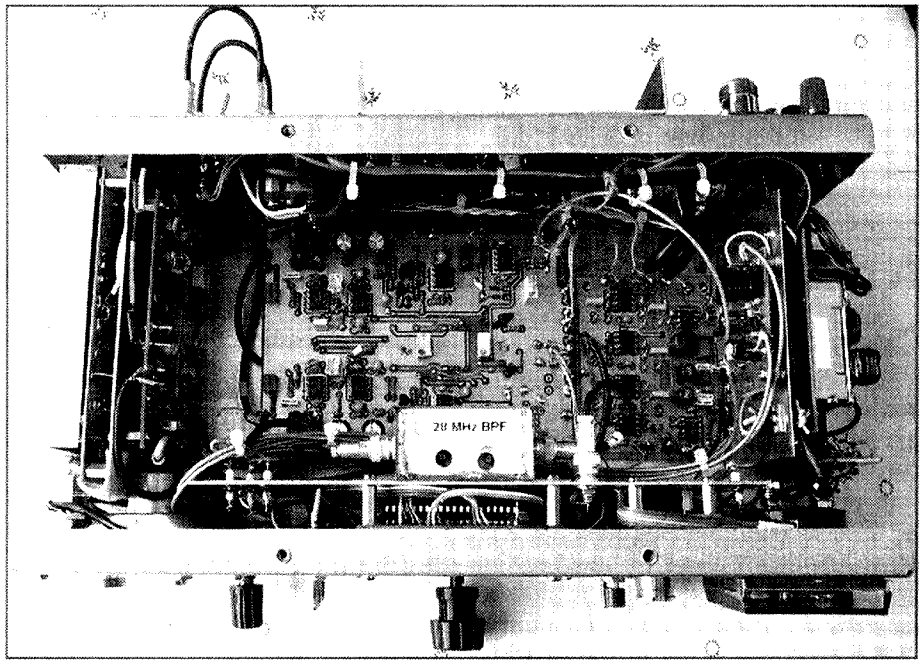


Figure 14: Interior view of the 2 metre transceiver. The RF circuitry is on the left hand side of the enclosure, the power supply and audio amplifier is on the right hand side. The RF power amplifier is mounted on the rear panel of the enclosure and the DDS circuitry is mounted behind the front panel.

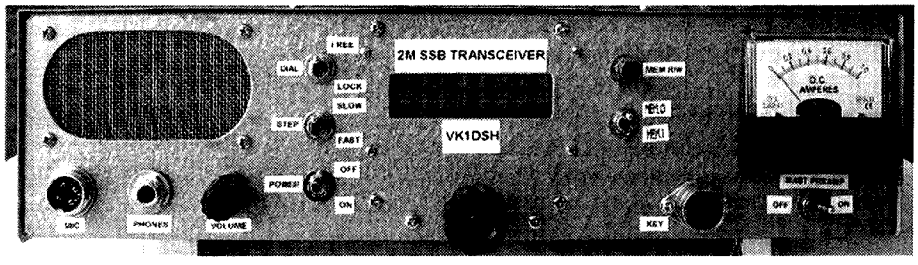


Figure 15: A view of the front panel. The DC ammeter provides useful information on the operation of the transmitter power amplifier; however it is not essential and can be deleted from the design if the constructor wishes.

Line Balance Meter discussion

Following the publication of the Line Balance Meter article in the August Amateur Radio, Rod VK3AAR sent in a detailed Over to You item. In the interests of clarity we relayed these queries to the article's author, Lloyd VK5BR, who in turn responded with an amended diagram. Here is Rod's item raising a number of questions, together with Lloyd's response.

Dear Editor
In my opinion there are significant technical issues with the article by Lloyd Butler in AR for August 2009 describing a transmission line balance test meter. These compromise its operation enough to make the unit fairly pointless.

The circuit is essentially two current measuring circuits using two toroidal current transformers where the output (i.e. the toroidal winding) is switched to a measuring circuit representing a low impedance load (CI burden etc) via a diode (D1).

This means that when the device is in use, one of the toroid burdens is unloaded and the balance of the two-wire transmission line is disturbed by the existence of the half-turn inductance that is the open-circuit toroid. As frequencies increase, the effect of this asymmetric condition becomes greater, and the absolute longitudinal impedances also present a problem.

Making current measurements in RF circuits (lossless or otherwise) is not a trivial matter, and Lloyd Butler's circuit and device would be significantly enhanced by the inclusion of resistive loads on EACH of the toroid outputs – those loads being selected to be non-reactive at the frequencies of interest.

Two further issues arise in the selection of those loads (considered in the context of the design of the toroids and impedances): that the effective longitudinal inductance of EACH toroidal load is small in comparison with the transmission impedance of the line being tested, and that the metering circuit (D1, CI etc) represents a load impedance (burden) that is high enough in comparison with the non-inductive load that is placed on each of the toroid outputs so as not to change the longitudinal impedance of each side of the line as switched.

The combination of those considerations ensures that the testing device does not disturb the longitudinal line conditions significantly, and that switching from outer to inner metering does not adversely change the balance anyway.

So much for fundamental impedance matters. I strongly suspect that Lloyd's comments on SWR deterioration at VHF would not be as necessary if the above were considered and it leaves

A phasing type transceiver for 144 MHz - Part 2 continued

Conclusion

With the information presented and in conjunction with the various references given, a SSB transceiver can be constructed for the two metre band.

In principle, the same approach can be used to build a transceiver for any other frequency band by making the appropriate changes to the RF quadrature network and signal frequency circuitry.

The main limitation of the existing design is the lack of any sort of Automatic Gain Control which means that the volume of the received signal can be low at one moment and quite loud the next, especially if they are from local stations and they are using high powered transmitters.

Despite this limitation, the transceiver works nicely, quite a number of pleasant contacts have been made using it.

While the present design provides a nominal three Watts output, additional linear amplification can be readily employed. I have recently built a 30 watt linear amplifier for this project; although a number of alternative designs can be found in the references or other literature.

The three Watt output is quite sufficient for local contacts, even DX; contacts of several hundred kilometres have been achieved using a nine element Yagi antenna. With a mast head amplifier and 30 Watt amplifier the transceiver has been successfully used for two-way contacts over the Canberra to Melbourne path via aircraft scatter.

The circuit board layouts and microcontroller firmware can be supplied to anyone who would like to use them as the basis of their own transceiver.

Acknowledgements

I would like to thank the various local operators who have provided opportunities for on-air tests and given signal quality reports. I would also like to thank Bill Maxwell VK7MX for reviewing the article and providing useful feedback and suggestions on content and style.

References

Reference 1:

"Experimental methods in RF design". Hayward, Campbell and Larkin. ARRL, 2003.

Reference 2:

"VHF/UHF handbook". Diddulph. RSGB, 1997.

Reference 3:

"Solid State Design for the Radio Amateur". Hayward and DeMaw. ARRL, 1977.

Reference 4:

http://freenet-homepage.de/dl4yhf/spectra1.html "DL4YHF's Amateur Radio Software: Audio Spectrum Analyzer"

Note:

Figures 10 and 11 are available in TIF format on the WIA website for those readers who require it in more detail.

ar

open the matter of how low a frequency might give fully satisfactory results. As burden loading of current transformers is a critically important issue at even power-line frequencies, I think that the above observations should apply at all RF frequencies.

Those who are interested in longitudinal out-of-balance conditions will be aware that SWR on the transmission line only tells part of the story. Some of Lloyd's comments are relevant to that although it is not specifically stated that way.

In his footnote he observes some matters on earth currents which may apply reasonably to small equipment where the physical size of the equipment is significantly less than the wavelengths being considered. In large installations – for example large amateur rigs on 6 metres or even 10 metres, this is far from the case, especially when the antenna is near the transmitting equipment.

In very large high power applications, local induced currents that are more related to radiation than the transmission line design can be so high as to be destructive. There is also a very special case where non-balanced antennas are used, such as is common at 160 metres or in new experiments in the LF band, where the effectiveness of the local earth is critical to operations and the existence of "floating voltages" can be so large as to mask other matters.

Metering under these conditions is problematic in the true sense of the word, and some considerations extend to difficult management of local earth connections generally. In a commercial world, those problems extend up to around 10 MHz when large vertical antennas are used.

In some special cases e.g. mountain top installations on rock footings, or at dry sandy locations where earths cannot be obtained easily, some very special action is needed. In some cases, "logical Ohm's Law" does not even seem to apply!

On a final technical comment, current measurement add-ons like this have to be designed to carry the currents concerned, and toroidal saturation and the power that has to be dissipated in the loads (burdens) have to be considered.

I for one have a number of badly damaged commercial in-line sensors where a 400 W PEP transmitter has been connected to an antenna that was faulty and the currents and/or voltages present have been enough to destroy the components around the toroid.

The above comments are from a professional point of view, and an amateur approach does not necessarily have to be so rigorous, but within an amateur environment

I guess I need to establish my credentials on this – around 40 years as a professional radio and transmission engineer with work with the Navy and Broadcast Engineering, and from time to time the responsibility for running instrumentation laboratories (some of that work is classified).

And I have held an amateur licence for 50 years. If you go through the AR archives you will find a series describing a multiband HF linear design and construction in 1974 that was considered good enough to warrant the technical award for that year – that might justify my credibility on practical amateur matters.

Rod Reynolds (B. E. (Tas), M. Eng. Sc. (Monash), C. Eng. (UK), MIET)
VK3AAR
reynolds@mira.net **ar**

Lloyd VK5BR responded

The observation by Mr Rod Reynolds that the current transformers should have been terminated is perfectly correct.

In fact, they were terminated as you can see if you look at my rear view photograph of the unit (Photo 3, Page 7 Amateur Radio, August 2009). The two 18 ohm terminating resistors are on the lower left of the photograph. As there are 15 turns on the toroidal core, and applying the inverse square law, one might assume a resistance reflected in series with the wire approaching as low as 0.1 ohm, a negligible value compared to a 50 ohm line impedance.

Had the transformers not been terminated in a low resistance, they would have inserted inductance in series with the line legs and not worked as current transformers.

In my advancing old age (I offer as a good excuse), I omitted to put the two 18 ohm resistors on the circuit diagram I sent to AR. I should have picked it up after Bill VK3BR sent me a draft of his redrawn circuit for publication. But I did not.

I can only apologise for my omission and ask that you correct the omission in a future issue of AR. The corrected circuit is also attached.

I must also thank Rod Reynolds for observing the error and saving me the embarrassment of having to sort out the problem further down the line when someone else attempted to get the unit working.

I agree entirely with Rod's comments made and the error was in my circuit checking and not in my original design in line with what Rod Reynolds has also said.

Best Regards Lloyd VK5BR

Editor's note:

There was some further correspondence regarding potential performance of the system at VHF frequencies and regarding the power handling capacity of the resistors used. Lloyd noted that the circuit was designed for HF frequencies only and that the VHF performance would likely to be compromised. He further noted that he had not observed noticeable warming of the resistor at 30 W continuous.

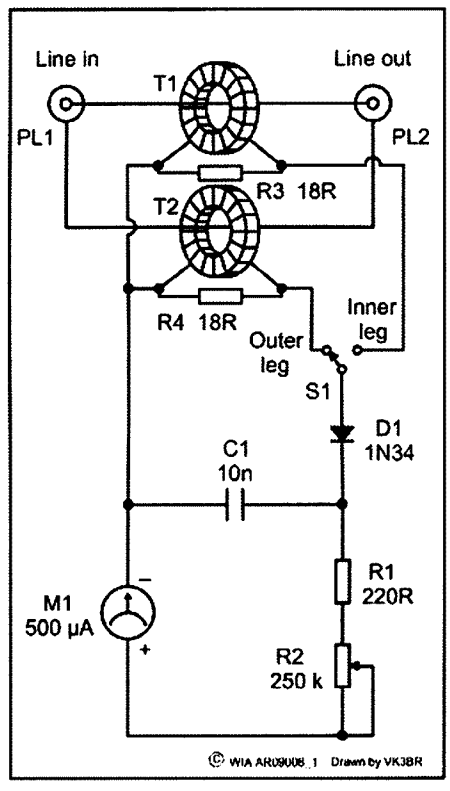


Figure 1: The corrected circuit diagram of the balance meter with the resistors noted in the diagram at R3 and R4.

Getting started on 136 kHz

Drew Diamond VK3XU

Hopefully, at some time soon, advanced amateurs will gain an LF band - 135.7 to 137.8 kHz (only 2.1 kHz wide). Apart from a handful of dedicated experimenters*, Australian individuals have not had transmitting access to frequencies below 1.5 MHz for the better part of 100 years.

Our UK and European friends have been working 2,200 m for about 10 years, and some keen New Zealanders have been using 130 – 190 kHz for a few years also. As a result, a wealth of practical amateur literature now exists to guide persons wishing to explore the challenging world of LF.

History

Radio (or wireless) communication is now well over 100 years old. Pioneers quickly found that large or 'long' wavelengths (early radiomen talked in terms of 'wavelength') achieved greater distances. To get good results, everything had to be big; huge high antennas, powerful sizzling, crackling, spark transmitters, or mechanically-driven alternators. Naval and merchant shipping were the main commercial users.

However, as from the beginning, a host of enthusiastic experimenters and amateurs also shared that part of the spectrum. Unfortunately, there being little or no regulation, severe mutual interference was a big problem. Eventually, amateurs were exiled to the supposedly 'useless' wavelengths below 200 m (Reference 1).

Today, LF is used for a number of applications, including non-directional navigation beacons (NDBs), broadcasting (mainly in Europe, around 200 kHz) and communications. On a recent holiday trip to the UK, it was interesting to listen to the powerful broadcast signals from France, Germany and, of course, England's BBC on 198 kHz.

These signal(s) seem able to reach into every nook and cranny of that hill and dale country. I confess to feeling a pang of envy upon hearing amateur narrow-mode signals around 136 kHz (and, during our last week near London, copying ordinary CW Morse signals on their MF allocation around 502 kHz).

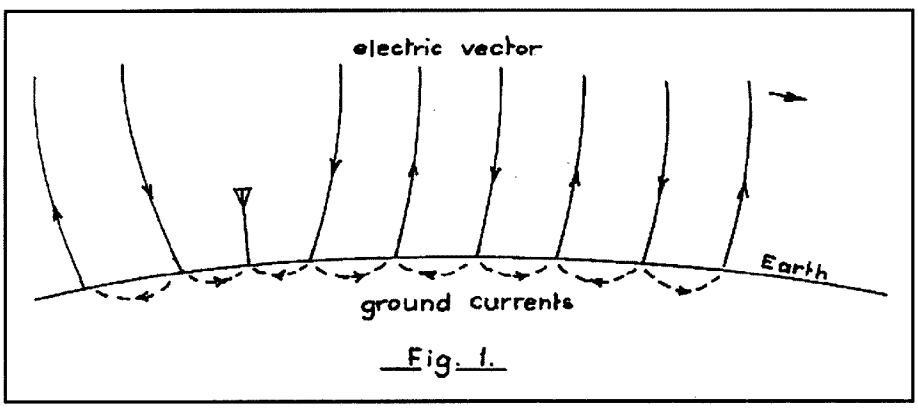


Figure 1: How the wave front is slowed by interaction with the ground.

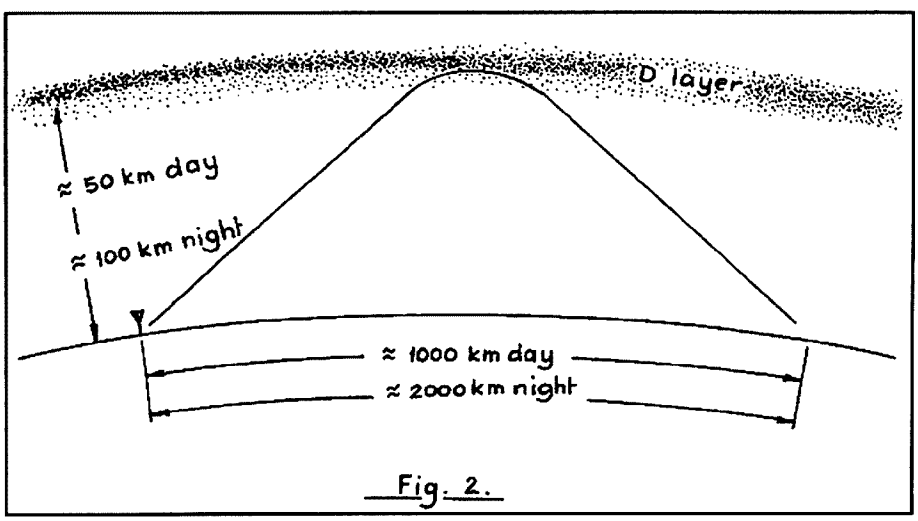


Figure 2: Signals deflected from the D layer at about 50—100 km above the earth's surface.

Propagation

On LF (generally 30 to 300 kHz), transmitted signals may reach a receiver in two ways. Firstly, by way of ground-wave energy that follows, or 'hugs', the curvature of the earth.

Figure 1 attempts to show how the wave front is slowed by interaction with the ground, which causes the front to tilt slightly, thus allowing signals to be detected far beyond the visible horizon (Reference 2).

Unlike our familiar higher frequencies, the ground-wave is less attenuated by surface absorption (particularly over sea-water), and thus may be detected without a 'dead-zone' up to perhaps 2,000 km from the transmitter.

Secondly, signals may reach a receiver by way of ionospheric deflection from the D layer at about 50 - 100 km above the earth's surface (Figure 2).

At distances of about 700 km from the transmitter, deflected waves may have a similar strength to the ground-wave, so fading usually occurs due to addition/subtraction interference between these two.

Beyond about 700 km the ionospheric (or 'sky') wave predominates. Reports suggest that daytime deflection occurs in the lower D layer at a height of about 50 km, whereas at night it occurs in the upper D layer at about 100 km, giving a

'first-hop' distance of about 1,000 and 2,000 km respectively (Reference 2). The curious are pointed to Reference 3 for a well-researched essay on LF propagation.

So, what is possible in reality? Even with the best practicable technical quality, efficiencies of significantly less than one percent may be all that is achievable.

Even so, well-made and operated European amateur stations have reportedly worked 1,000 km paths using CW Morse and super-slow Morse (QRSS3 and QRSS120), and UK amateurs have crossed the Atlantic on 136 kHz (Reference 2).

Antenna

The usual method of creating an effective ground-wave signal is with a vertical radiator, worked against a ground radial or counterpoise system. The customary model is a quarter-wave monopole, shown in Figure 3a, variations of which are a popular amateur choice for HF-UHF work.

Being a naturally resonant conductor, without need of loading devices such as coils and/or capacity hat, and where resistive losses are low, a quarter-wave vertical antenna can be a very efficient radiator. An electrically short vertical radiator is drawn in Figure 3b, showing how (it is conjectured) the displacement current produces the magnetic or H component of the near-field.

At 136 kHz, the wavelength is about 2,200 m, so a full-size quarter-wave radiator would need to be about 550 m high; hardly a practical scheme (Figure 4). For the home station though, it is generally possible to erect, or press into service, a structure of more modest size.

Two popular realistic arrangements are illustrated in Figure 5. A typical 'inverted-L' or Marconi configuration is shown in Figure 5a, where the 'shack' is near one end of the property. An existing 160 m inverted-L may well serve.

Figure 5b shows a 'T' antenna for use where the shack is near the middle of the property. It might be that the feed-line of an existing 80 or 160 m dipole can be shorted at the station end and worked against ground, in which case the feed-line must run in the clear, directly to the shack.

Real radiated power is proportional to

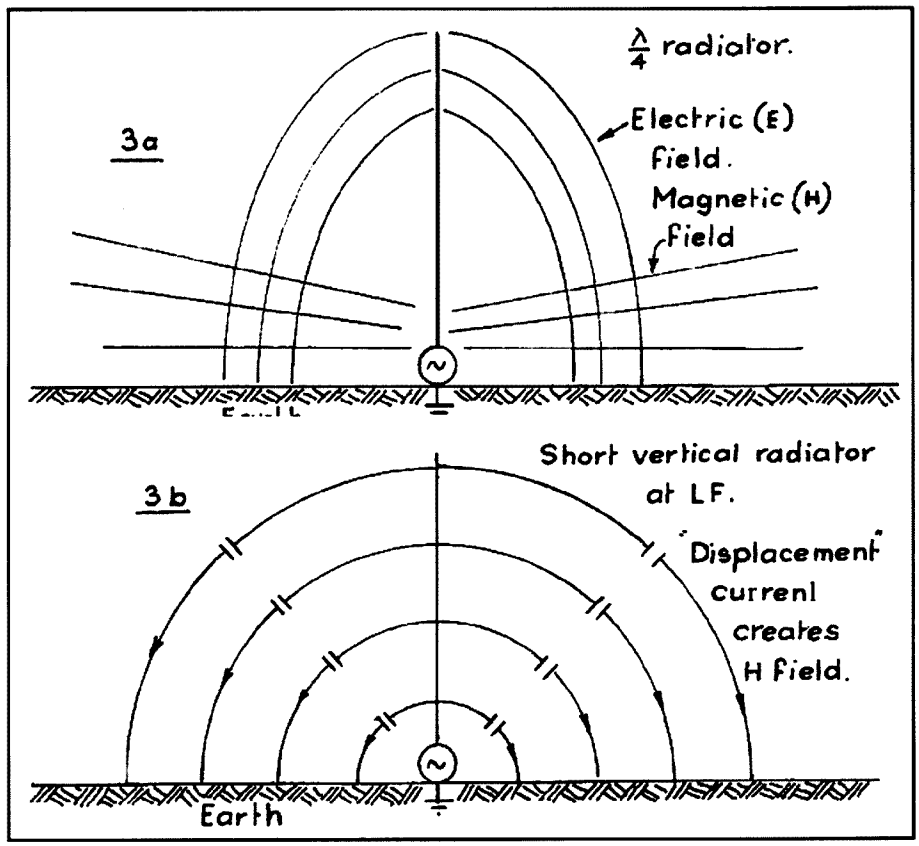


Figure 3: Both a conventional quarter wave, and a short, vertical monopole radiator.

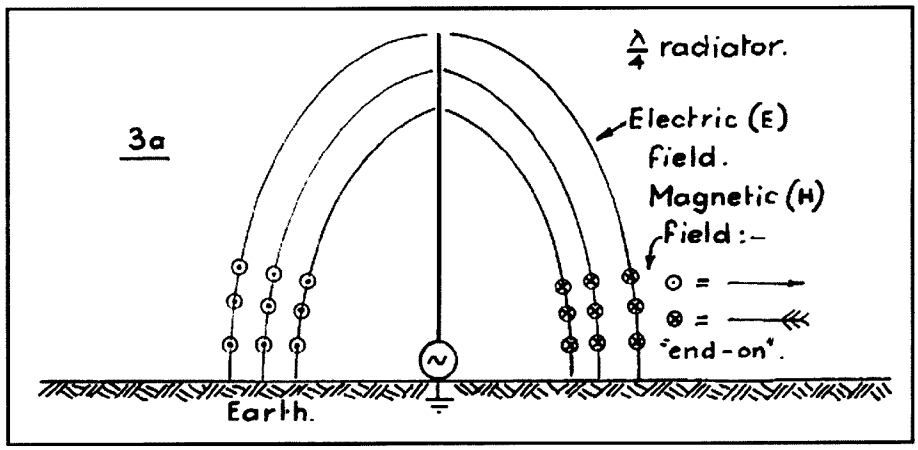


Figure 3a: A conventional quarter wave monopole vertical radiator.

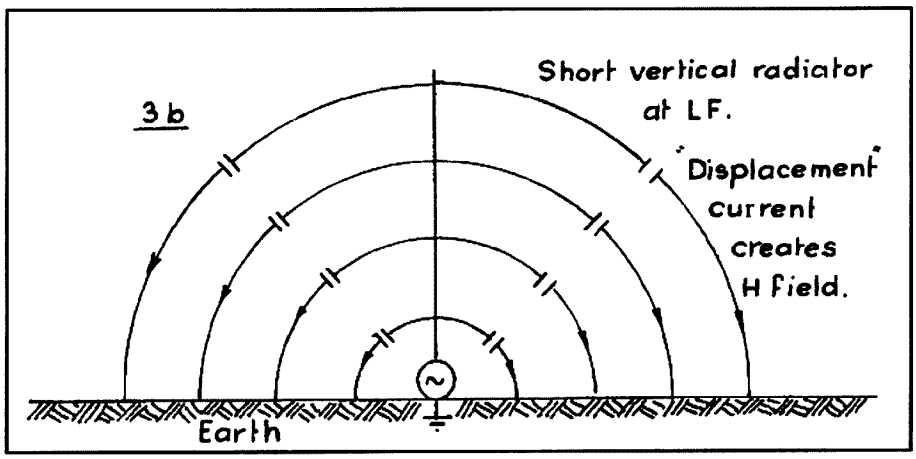


Figure 3b: A short vertical radiator at L.F.

the radiation resistance of the antenna, and inversely proportional to the sum of the loss resistances. Radiation resistance increases in proportion to the square of effective height (effective height will always be somewhat less than actual height, see Reference 4). So the amount of energy actually radiated is, therefore, proportional to height squared. Hence, it comes as no surprise that the most important dimension for an LF antenna is height.

Effective height may be improved by increasing the amount of capacitance in the top 'loading' section of the antenna (because of its closeness to ground, in terms of wavelength, little or no radiation occurs from the top section). If the top wire is made as long as possible, then effective height will more closely approach physical height - provided that the wire does not sag greatly.

In circumstances where length is limited, capacitance may be increased by using multiple wires in the top section of a T or L arrangement. Two wires spaced 1 m apart will increase capacitance by about 68 % (Reference 2).

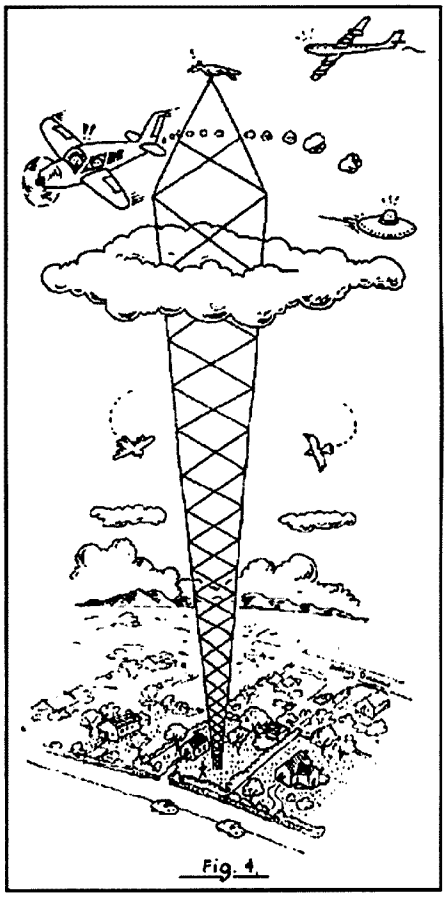


Figure 4: A full quarter wave at 136 kHz would be impractical.

The usual 'standing-wave' concept of understanding HF antennas cannot readily be applied to an extremely short LF radiator, for which it is conjectured that vertically polarised radiation is produced by the electric field established between the top wire and ground, where the resulting displacement current creates the magnetic component of the near-field. The voltage on the wire will be almost equal along its length, whereas the current will be highest at the feed point, tapering to zero at the far end(s) of the wire.

Nearby buildings, mast(s) and trees/ tree branches all come under the influence of the near-field, so the entire antenna wire must be erected so that it is well clear of metal and dielectric objects.

End insulators should be first-class and of the long-leakage path type at all support points. Also, the wire must be well insulated, and a feed-through insulator installed where it enters the shack. Figure 6 shows some potential sources of loss.

Loading coil

A 'back-yard' antenna can only be a tiny fraction of a wavelength long at LF, so the radiator is operating well below its natural resonant frequency. Consequently, a large amount of inductive and/or capacitive loading is necessary so that the system will accept power, and present a resistive load to the transmitter. The usual method is to connect a loading or tuning coil (sometimes called a 'helix') at the feed-point.

A typical circuit arrangement is shown in Figure 7a. Taps near the top and bottom of the coil allow for resonating (top) and matching into (say) 50 ohms. These two adjustments interact, so some juggling is required. A peak in thermocouple ammeter (or current transformer ammeter) reading will indicate optimum adjustment. Danger! High voltage exists near the top of the coil and along the entire antenna – keep hands well away.

Shown schematically to the right in Fig 7a is the antenna as load, where Ca is the natural capacitance (that must be resonated with our coil), radiation resistance Rrad (probably a fraction of an ohm), and all the losses (coil, wire, earth, dielectrics, insulators) bundled into Rloss.

In order to find how much loading inductance is required, we must first estimate the antenna's total natural capacitance. A workable rule-of-thumb

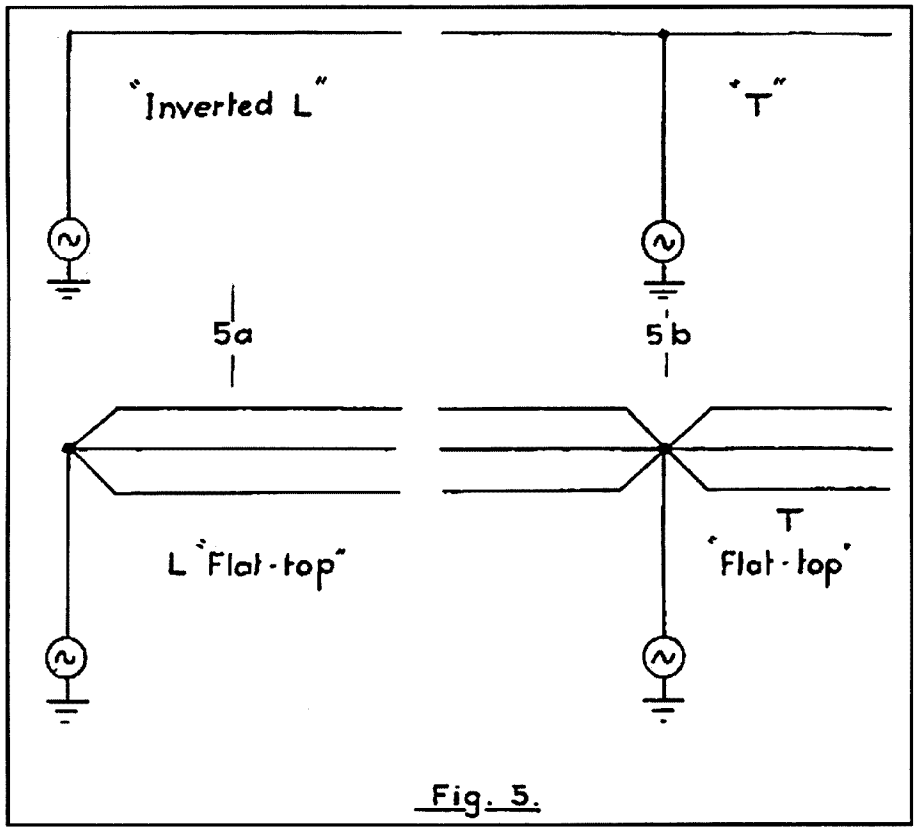


Figure 5: Two popular realistic 136 kHz antenna configurations.

for ordinary 7-strand electrical wire is 6 pF per metre for the vertical part, and 5 pF/per metre for the top, or horizontal, section (Reference 4).

Let's take my L antenna as an example. The vertical part is 12 m; 12 x 6 = 72 pF, and the horizontal part is 42 m; 42 x 5 = 210 pF. Total: 282 pF.

The amount of inductance in micro-Henrys required to resonate the antenna's capacitance may be calculated:

$$L = \frac{25330}{f^2 \times C}$$

Where:
L (inductance) is in micro-Henrys (uH),
f (frequency) is in MHz,
and
C (capacitance) is in picoFarad (pF).

$$L = \frac{25330}{0.136 \times 0.136 \times 282}$$

= 4856 uH, which is rounded to 4.9 mH.

A handy former material is white or orange PVC electrical or water pipe. My coil, wound with solid enamelled copper wire (ecw) (for best Q - avoid using ordinary plastic covered electrical wire) upon 160 mm diameter UVPC pipe is shown in Photo 1 (outlined in Reference 5). More plans for practicable coils may be found in References 2 and 3.

Variometer

Tuning by tap adjustment can be rather coarse and fiddly in practice, and it always seems that the optimum point lies somewhere between two taps. The usual ploy is to install a variometer, or variable inductance, in series with the main coil to provide incremental adjustment (Fig. 7b).

A home-made 100 micro-Henry variometer is pictured in Photo 2. The outer coil, 16 turns of 1 mm (#18 B&S) ecw, is wound upon a 50 mm length of white 115 mm diameter PVC pipe. The inner rotatable coil is 15 turns of 1 mm ecw upon a 50 mm length of 90 mm PVC pipe. The inner coil must spiral back down inside the outer coil in the same 'sense' - like an electro-magnet coil is wound, so that their inductances add.

A central hole (suggest 0.25 inch [6.35 mm]) is drilled across the diameter of both formers to admit a plastic shaft (mine is made from a #3 knitting needle) for rotation of the inner coil. Leave plenty of shaft extension so that the knob may be fitted some distance from the coil.

The shaft can be fixed into the inner coil former with epoxy or hot-melt glue (both quite good dielectric material). Use appropriate fibre washers so that the inner coil may be smoothly rotated through 90 degrees. A short length of copper braid is used to connect the inner and outer coil.

Ground

A low resistance ground connection is essential. Traditional amateur literature abounds with information on this topic (e.g. References 2 and 4). An ordinary 1 m electrician's ground rod, in moist loamy soil, located as close as practicable to the loading coil, would have a resistance of about 20 ohms (Reference 4). As the main losses are elsewhere in the system (coil and dielectrics), this 20 ohms would comprise a fraction of the overall loss, and so such a ground might be considered as a fair starting point. However, extra rods inserted close by, and an additional connection to the house metallic cold-water system, all bonded together with stout copper wire or strip, would be an advantage. My shack is located on stony soil, so the bottom wire of a long post-and-wire fence has been pressed into service at present.

Receiver

Most recent model transceivers provide general coverage down to perhaps 100 kHz. Unfortunately, some examples give far less than adequate performance on LF. The usual problem is front-end overload from local AM broadcast stations, which pop up everywhere through the LF band.

Sensitivity may be severely reduced too. When receiving on (say) the main transmitting antenna, an enormous

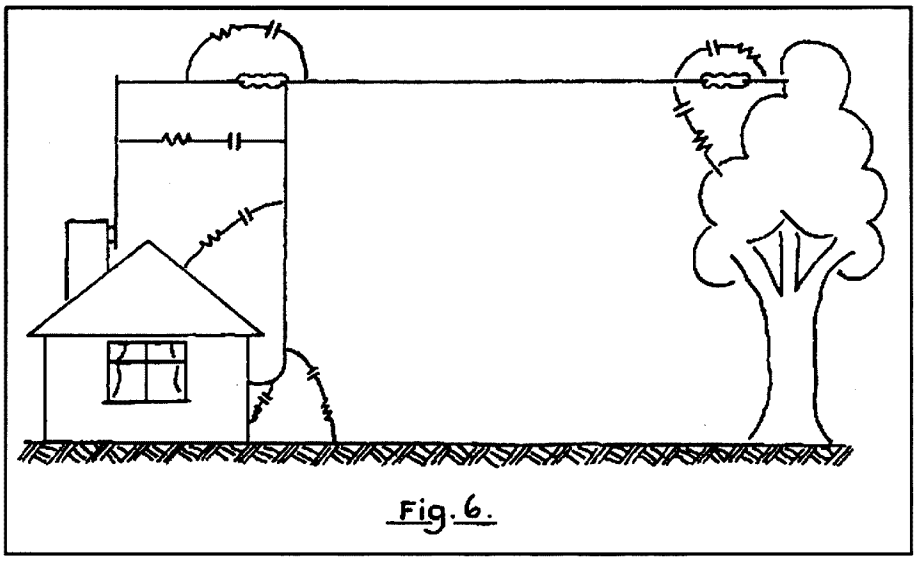


Figure 6: Some potential sources of loss.

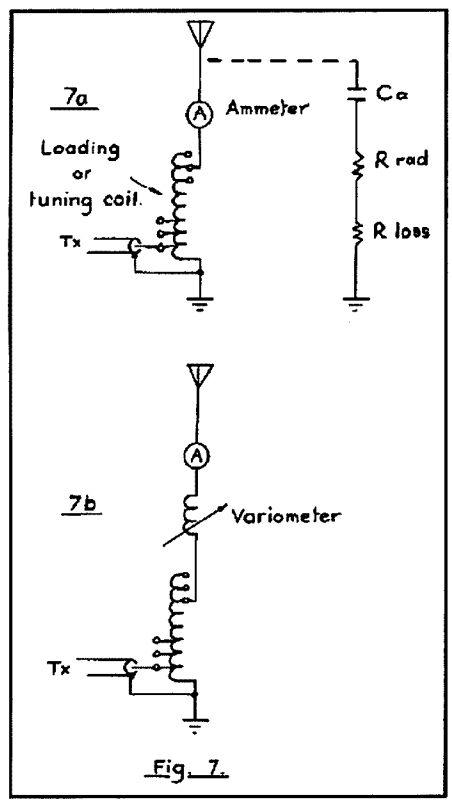


Figure 7: Examples of some typical antenna circuit loading arrangements.

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amount of LF and MF broadcast energy is presented to the receiver, along with a galaxy of spurious harmonics and noise from nearby domestic appliances.

Generally, a loop-stick or wire loop antenna ahead of either an LF converter, or LF pre-amplifier, will give much better results because, in most instances, the loop may be aligned so that the worst of the noise is 'in the null', leaving the wanted signal substantially unaffected, and the Q of the tuned loop imparts a high degree of front-end pre-selectivity. A simple, but quite effective, LF converter was described in Reference 6.

References 2 and 4 have ample information on receiving techniques. See also Joseph Carr's technical note #8 on his web-site (Reference 7). Look out as well for any articles from Richard Q Marris G2BZQ, Britain's 'Receiving Loop Man'.

Transmitter

Our maximum permitted effective radiated power is 1 W (Reference 4 has useful formulas for calculating this).

Considering the poor efficiencies involved, it is unlikely that a home-station antenna will radiate anything like this level of power, so it is suggested that about 50 to perhaps 500 W transmitter RF output will be required.

My own puny 50 CW transmitter (outlined in Reference 8) might make a good 'starter' project, and would find use as a 'driver' for a more powerful job. Numerous plans are detailed in References 2 and 4. Do also explore the 136 kHz technical web-site (see Reference 9) where may be found a large collection of related material.

Measuring Equipment

The thermocouple ammeter has already been mentioned for measuring antenna current. Due to their fragility, though, good examples of these are becoming increasingly rare. Yet it is very useful to be able to measure RF current, so consider making a current-transformer type meter. A simple project was outlined in Reference 10.

An ordinary strip-line SWR meter, though fine for HF and VHF work, would be useless at LF. A better pattern is the current transformer SWR bridge of the type outlined in Reference 11.

References and Further Reading

1. *Two Hundred Meters and Down – the story of amateur radio*: DeSoto, ARRL.
2. *LF Today - A Guide to Success on 136 and 500 kHz*; Dennison and Moritz; RSGB Publications.
3. VK3ACA's Medium and Long-Wave Page: http://member.melbpc.org.au/~jadcock/
4. LF Chapter 10, *Radio Communication Handbook*, 9th edition. RSGB Publications.
5. "A loading/tuning coil for 137 kHz antennas"; *Amateur Radio*, November, 2008.
6. "An LF Converter with loop-stick antenna"; *Amateur Radio*, July, 2008.
7. www.dxing/tnotes.htm
8. "A 50 W CW Transmitter for 137 kHz"; *Amateur Radio*, September 2008.
9. www.qsl.net/on7yd/136brew.htm
10. "RF Ammeters for high-frequency measurements"; *Amateur Radio*, November 2004.
11. "A combined MF-HF SWR meter and RF ammeter"; *Amateur Radio*, April 2008.

*In the 1970s, a group of amateurs, John Adcock VK3ACA/AX35T35; Peter Forbes VK3QI; Don Bainbridge VK3IT; and Dennis Sillot VK3WV did some noteworthy experimental work. Their efforts were reported in *Amateur Radio* for July 1984 titled: "Experimental Stations on 195 kHz". More recently, Robert Miln VK7ZAL/AX2TAR, has carried out some heroic exploits on and about 177 kHz. See also receiver and transmitter plans published by Lloyd Butler VK5BR.

Editor's Note: Advanced licence holders can apply to the ACMA for a variation in their licence so that they can operate on a secondary basis on the new band. Until such time as the LCD is updated, the band is only available to those who request the licence variation. Full details can be found on the WIA website at: http://www.wia.org.au/newsevents/news/2009/20090611-1/index.php

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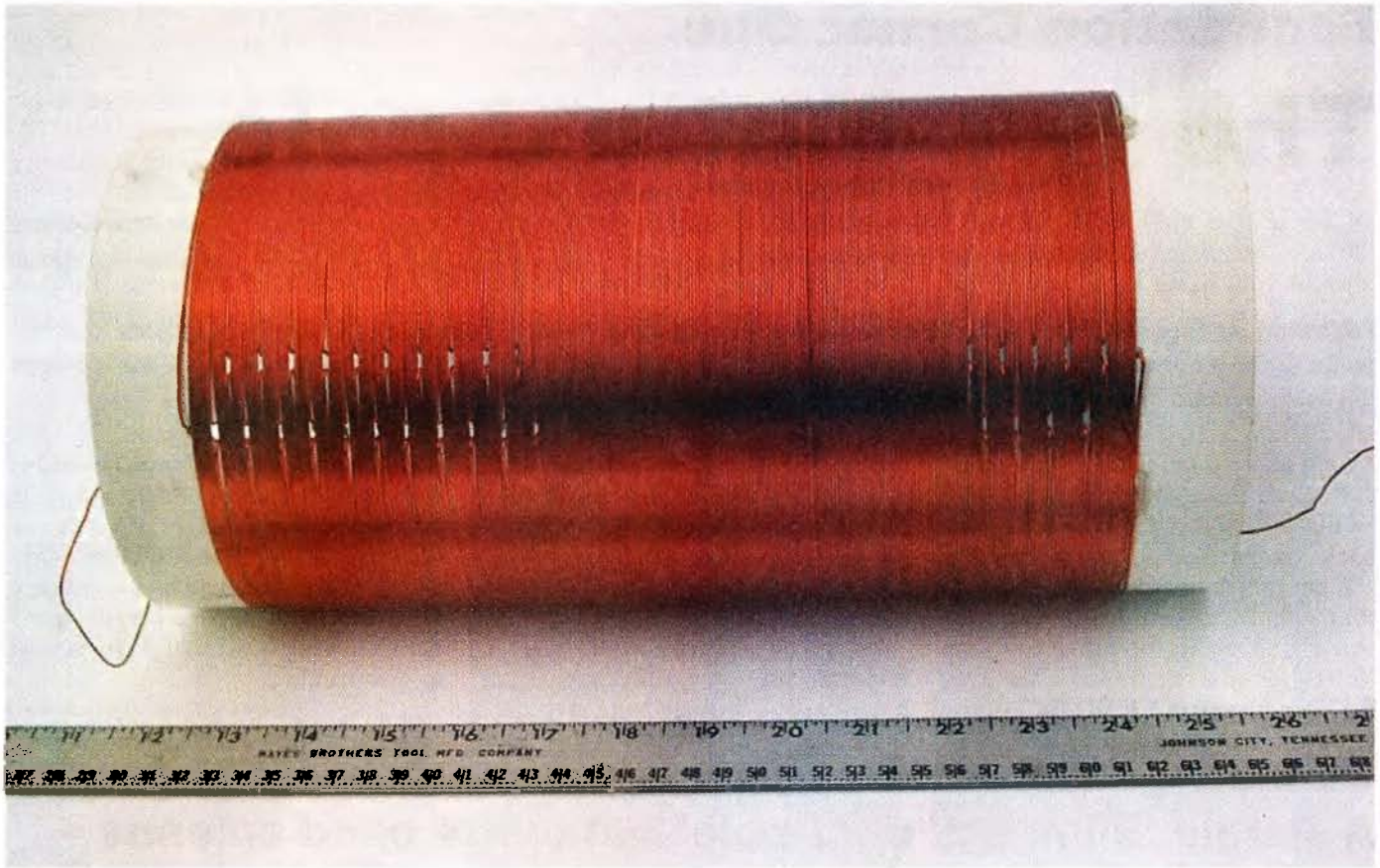


Photo 1: My antenna loading coil, wound with solid enamelled copper wire upon 160 mm diameter UVPC pipe.

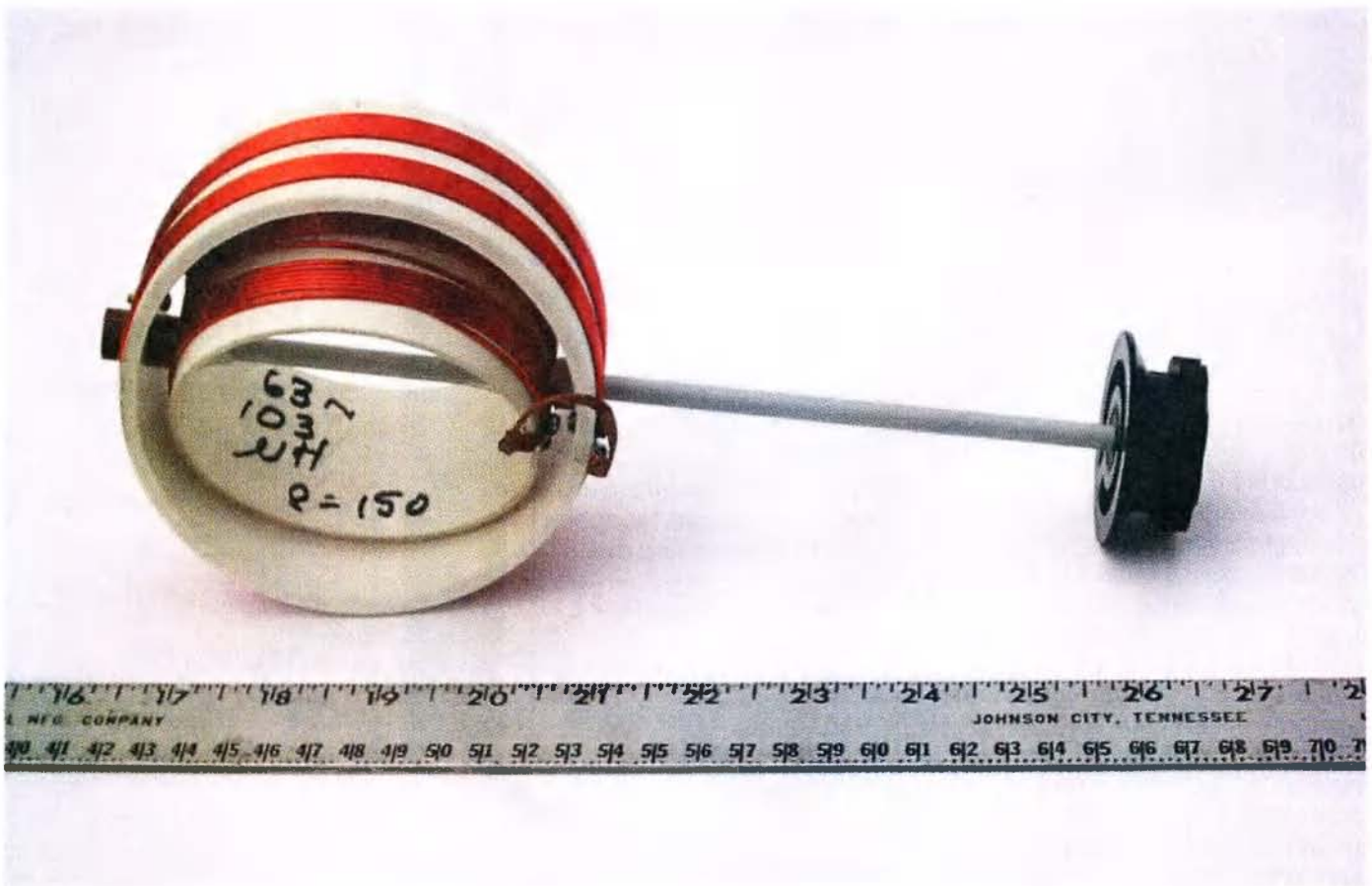


Photo 2: A home-made 100 micro-Henry variometer.

Foundation Corner One

The two metre J-pole

Ross Pittard VK3CE
vk3ce@amateurradio.com.au

Following an appeal by the Editor of *Amateur Radio* magazine, Peter Freeman VK3KAI, for volunteers to write some articles suitable for and of interest to Foundation licensees, I have started writing an occasional column devoted to basic hints and ideas particularly suited for those just starting out in our hobby.

No claims for originality are made and a fair amount of what we will be discussing is already available in books, magazines or on the internet.

A number of readers will be aware that Amateur Radio Victoria has been running its original F-Troop Net following the Sunday morning WIA broadcast on VK3RMM 2 metre repeater for the last three years.

This net is primarily designed as a forum for new licensees to come on air, ask questions and hopefully gain experience in their new hobby. I have been one of the three net controllers since its inception.

Over the coming months it is hoped to review various topics that have been discussed on F-Troop in the past.

One of the most common questions new radio amateurs have asked is a design for a 2 metre antenna, as this band is, for many, the first they use. I do not claim to be an antenna guru but from my past experience the following is probably the easiest to construct.

A simple 'Slim Jim' or 'J-pole' two metre band antenna

Slim Jim, originally described by Fred C. Judd G2BCX, is very simple to construct, vertically polarised, requires no ground plane and has a low angle of radiation.

Its radiation is mostly parallel to ground toward the horizon, giving some gain and making it a better performer that a ground plane antenna. The Slim Jim is a half wave end fed folded dipole while the J-pole is a half wave dipole; both variants are fed by a quarter wave stub.

The origins of the J-pole go back to the Zeppelin German airships which used this type of dipole as a trailing antenna. It was later adapted for amateur radio purposes.

The original Slim Jim article described construction of a 2 metre version made from aluminium tubing. The most cost effective method of construction I have found is to use a piece of 300 Ohm TV ribbon transmission line cut to the required length, with the ends shorted together – refer Figure 1.

All that is required to tune either antenna is an SWR bridge at the transmitter end and adjust the coax up and down to get the best match. An SWR of less than 1.5 should be easily obtained. Various construction

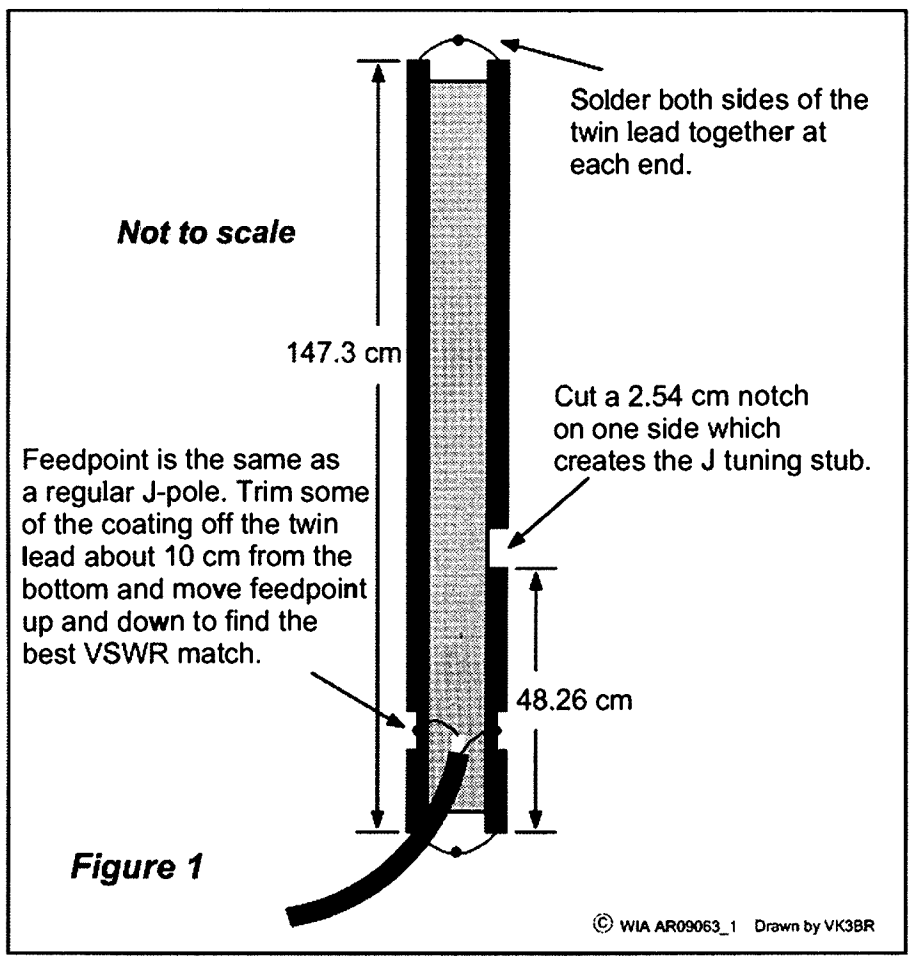


Figure 1: Diagram of the Slim Jim constructed from TV twin lead.

ideas have been used over the years for these antennas including copper wire taped to a broom handle, the ribbon as described mounted inside a PVC tube, a 'plumber's delight' made from copper pipe and elbows and last but not least, aluminium tubing as per the original design. The antenna works equally well when scaled and cut for the 6 or 2 metre band, or 70 cm.

As a base station antenna the author uses a J-pole – refer Photos 1, 2 and 3, made from copper wire taped to a broom handle which slides easily into a TV hockey stick mount and is covered with PVC pipe for weather proofing.

For a more detailed explanation of the theory behind the Slim Jim and J-pole plus an online calculator for dimensions of both antennas I suggest having a look at **http://www.m0ukd.com/Slim_Jim/index.php**

For many years when I was working away from home I had a TV ribbon Slim Jim rolled up in the bottom of my bag with my 2 metre hand held. They certainly out-perform the rubber ducky antennas as supplied with most hand held radios.

That is all for this month and if anyone has any questions or ideas for the column please email the editor or myself.



Photo 1: The 70 cm J-pole version with PVC cover.

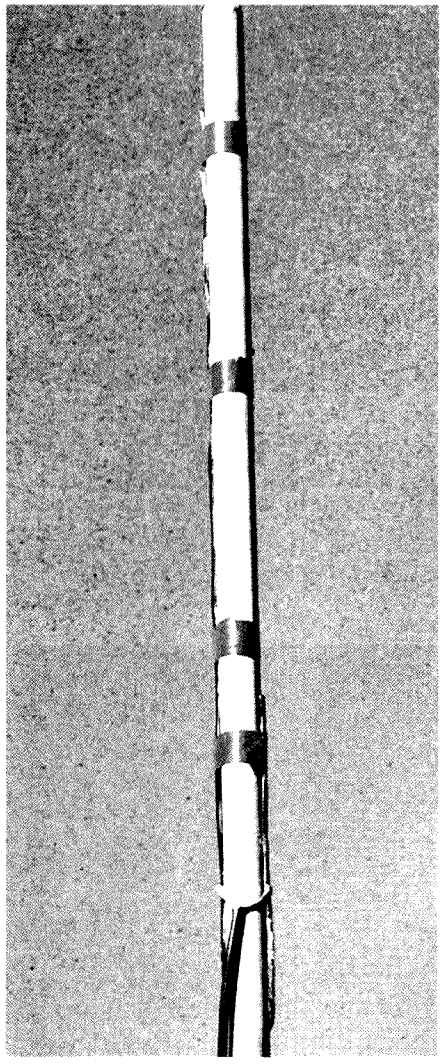


Photo 2: The 70 cm J-pole with the PVC cover removed.



Photo 3: Close up of feed connection.

Reference

Fred Judd G2BCX, Slim Jim 2 metre Antenna, from Out of Thin Air, published by Practical Wireless 1980.

A copy of the original article can be found in the download section of my web site. http://vk3ce.no-ip.info/

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Some adventures in antennas

Peter Carter VK3AUO

I once went on a holiday to the other side of the continent, namely to Perth. I bought a new helically wound antenna to work 20 metres back to Melbourne. I also had with me an antenna with a set of screw-on coils to use on all bands; that is, a top loaded system. When the top loaded system came up with something in the order of one and a half to two S points ahead of the helical, I relegated the latter to the dustbin.

Back home, I need to run an efficient mobile whip on 80 metres for RECOM emergency operations.

This is a demanding exercise given that the short vertical has a low radiation resistance of about three ohms. The radiation resistance is in series with the resistive losses in the loading coil and the earth return circuit, so that only a tiny percentage of the input power is effectively radiated.

The best that can be done is to maximise the length of the high current area which means that the best results are likely to come from a top loaded system. Photo 1 shows a top loaded antenna that performs well. But there are trade-offs: the further up the antenna the loading coil is placed, the higher the inductance that is required, the bigger the resistive loss and the larger the weight on top. As a guide to inductance, the ARRL handbook gives detail of inductor values for centre loaded whips.



Photo 1: The top loaded antenna deployed

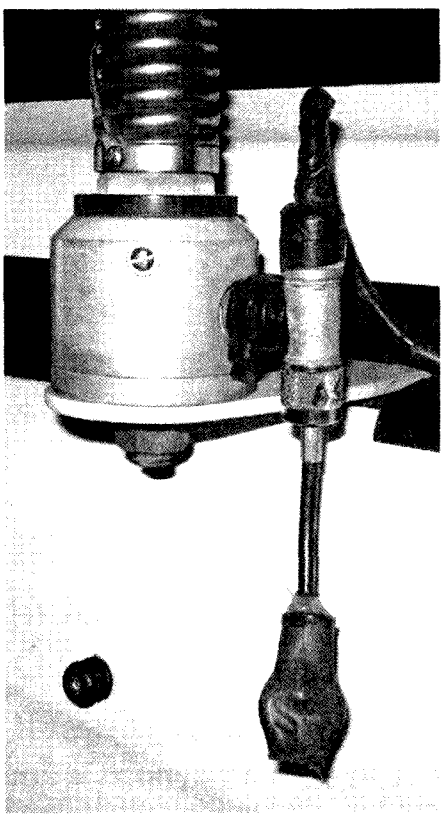


Photo 2: Matching capacitor connected via coax T-piece

Matching

There are three common ways of matching a mobile antenna to the 50 ohms output of the transmitter and the coax feed line.

These are: a tapped coil at the base, a tapped ferrite transformer or an L match.

An L match is mechanically straightforward and is simple to get going. L matches can be used to match resistances from low to high, or high to low. A short vertical antenna will present a load of about 30 ohms. The L match requires two components, an inductor and a capacitor.

If the capacitor impedance is connected to earth then the inductive element can be incorporated in the inductance of the antenna itself, and is adjusted when tuning to resonance. So adjusting the capacitance to earth is the only component that is of concern. This can be assisted by calculation or by trial and error.

The capacitance required for an 80 metre whip will be in the order of 1000 to 2000 pF. An antenna analyser makes tuning a simple process. A good method of applying the capacitance is by using a screw-on to a coax T-piece as shown in Photo 2. This can be changed for different bands.

Some Traps for Young Players

The voltages at the top of the loading coil and at the tip of the tuning stub are very high.

Photo 3 shows the burns which resulted from not cleaning the inside of the coil former, so that accumulated dust collected a little moisture and was sufficient to provide a current path.

Another trap is that a sharp tip on

the tuning stub can result in corona discharge, upsetting any hope of achieving a 50 ohm load as seen by the transmitter.

Once arrived at a destination, there is a need to work 80 metres portable. To increase the length of the antenna over and above a mobile whip gives an obvious advantage and this is usually done using a squid pole, supported on a tripod.

A dipole is an option but requires a lot of space on the lower frequencies and is an embarrassment in public places.

Another is a long wire to a tree or some such object. If the long wire is shorter than a quarter wave, then it will present a load less than 50 ohms so that an L match with the capacitor leg to earth is appropriate. The vehicle provides sufficient earthy counterpoise in each case.

Ferrite Rod Tuning

A useful way to resonate a single ended system is to use a coil as part of an L match and vary the inductance with a ferrite rod.

A coil wound on a poly water pipe of 40 mm OD, with 23 turns over a length of 50 mm, was on hand, the inductance approximating 12 μH.

With a broadcast band ferrite rod which can be bought for less than $2, it provided a comfortable range of inductance to readily tune a considerable range of long wire or vertical lengths.

A tap in the centre of the coil is required for 15 metres, or more, of long wire. Photo 4 shows a prototype matching unit.

As a starting point for constructing such a system using 15 metres of long wire, 1000 pF of fixed capacitance plus a 500 pF variable provides for the earth leg. Using an SWR meter or an antenna analyser, it is a straight-forward process to arrive at an accurate match.

An MFJ Antenna Analyser or the kit from the South Coast Amateur Radio Club in SA (see Hamads) makes such fiddlings a breeze!

Investing in this approach may well be a better option than purchasing commercial T match units or automatic matching units which, in the lower frequencies, can introduce quite severe losses.

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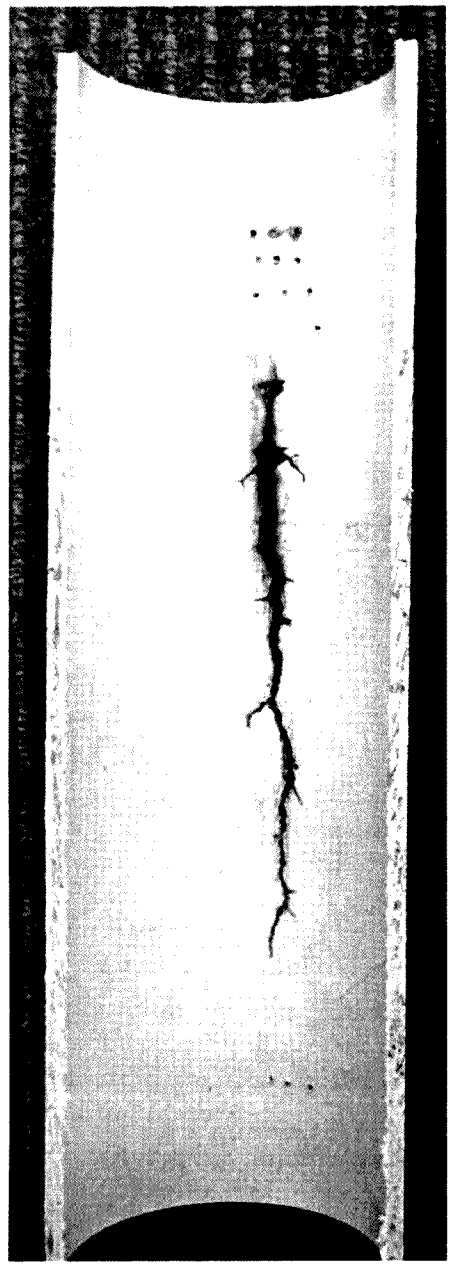


Photo 3: Burn on coil former

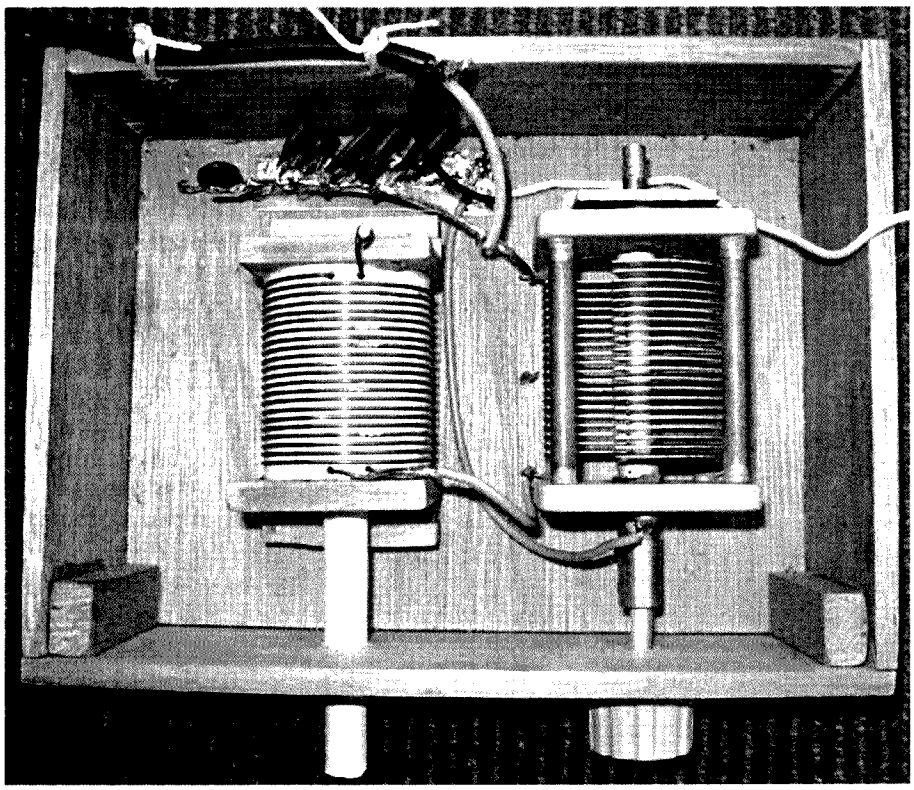


Photo 4: Prototype L match

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IEC plugs and sockets – an EMI filter adapter

Lyle Whyatt VK5WL

My desire was to provide an EMI filter in a 240 volt lead to determine if RF was entering some equipment. My choice was to use an IEC chassis socket with EMI filter (Altronics P6352A, Jaycar MS 4003) as part of a normal Australian plug/socket arrangement. The final product is shown in Photo 1.

Aside from using many pieces of equipment with the IEC plug/socket/leads, I had not taken a lot of notice of the polarity of the active and neutral pins and certainly had not committed to memory which was active when looking at the socket (female). One may be "helped" in this task when using the EMI filter sockets because they usually have a wiring diagram on the label including component values and conductor letters (A & N or L(oad) & N).

However not all labels will correctly indicate the active and neutral through the filter.

Photo 2 shows two filter sockets (Canny Well brand) with the wiring detail at right angles to the line through the filter. No help! But please note the different component values because one is a 10 A unit and the other is the more normal 6 A variety.

Photo 3 shows two filters (TSC brand) with the diagram 'in line' with the pass through wiring of the filter. One is supplied with wire tails, the other with connector lugs. Now look at the labelling of the A & N conductors! The unit with coloured tails is labelled and wired correctly. The unit with the lugs is wrong, with A & N transposed on the label.



Photo 2: Two IEC filter units with poor marking.

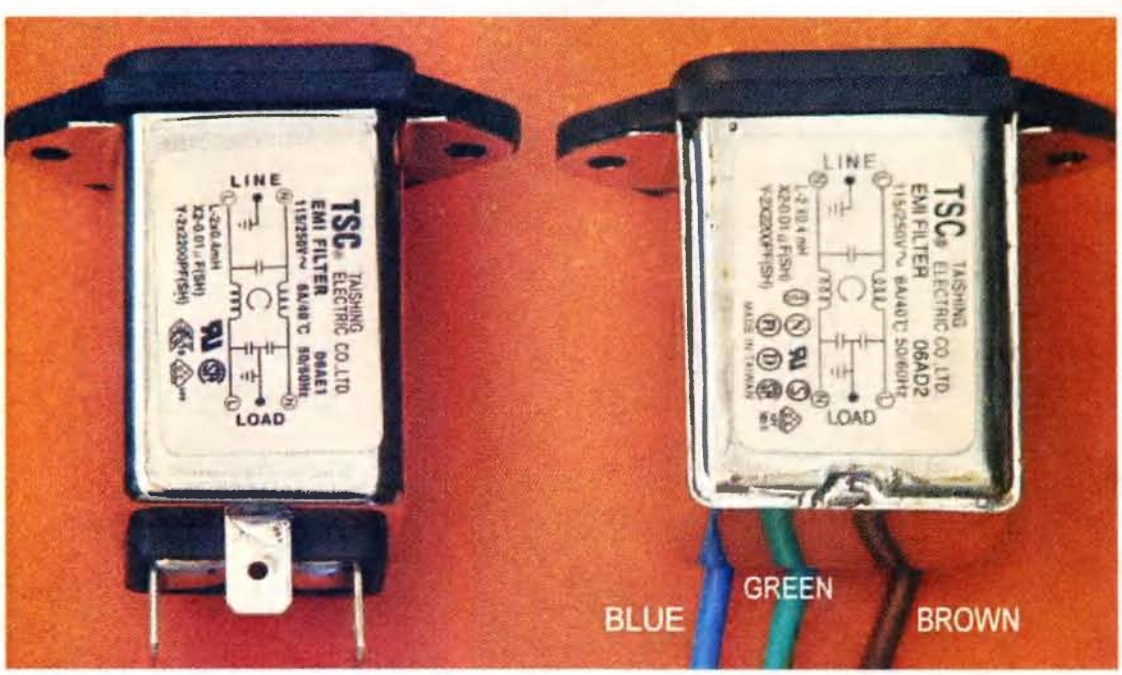


Photo 3: Another pair of IEC filter units from a different manufacturer. Again, it is easy for the unaware to be confused – see text.

Photo 4 shows the pin arrangement used in Photo 3 has the earth pin (centre) uppermost for both filters.

Be WARNED.

Do not trust the 'wiring details' on these filters to truly identify Active and Neutral connections. Always connect the filters according to the standard configuration for these IEC plugs and sockets.

I decided to commit to memory the arrangement of pins with the IEC plugs/sockets. This is simple for us Australians

where the *socket* (when viewed with the earth pin lowest) is as shown in Photo 5. Active on the left and Neutral on the right. The IEC *sockets* are just the same – Active on the left and Neutral on the right with the earth pin lowest.

Or looking at the *plugs*, again with earth lowest, Active on the right and Neutral on the left for the Australian and IEC plugs as shown in Photo 6.

Having originally put together my adapter device, using incorrect TSC filter unit wiring, I tested it with the little three-light tester (Jaycar QP2000 or similar) and found it had the active and neutral reversed. This discovery led me to think of the fallacy of accepting manufactured marking and items as being always correct, and your safety, or lack of it, when using these non-Australian Standard components.

I would recommend two things:

Always test any extension lead/device you make with the three light tester or similar device.

Learn, and commit to memory, the layout of Active and Neutral connections for both *plugs* and *sockets*, which applies to both Australian and IEC components. **ar**

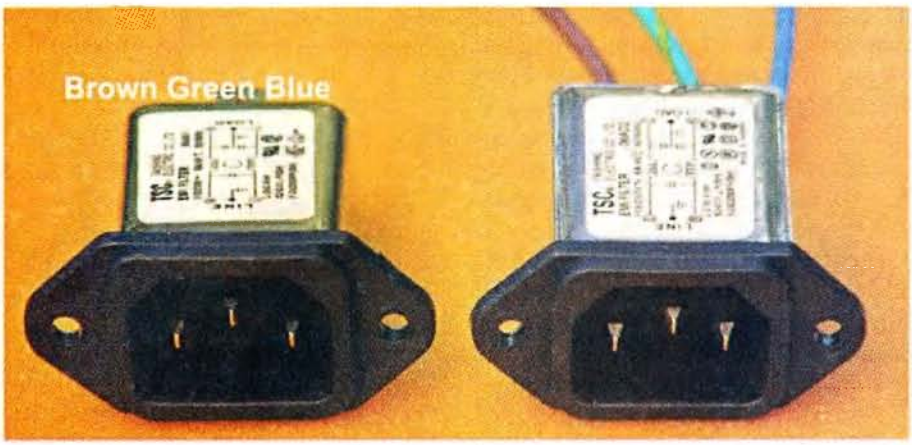


Photo 4: The two units from Photo 3, viewed from the opposite end.

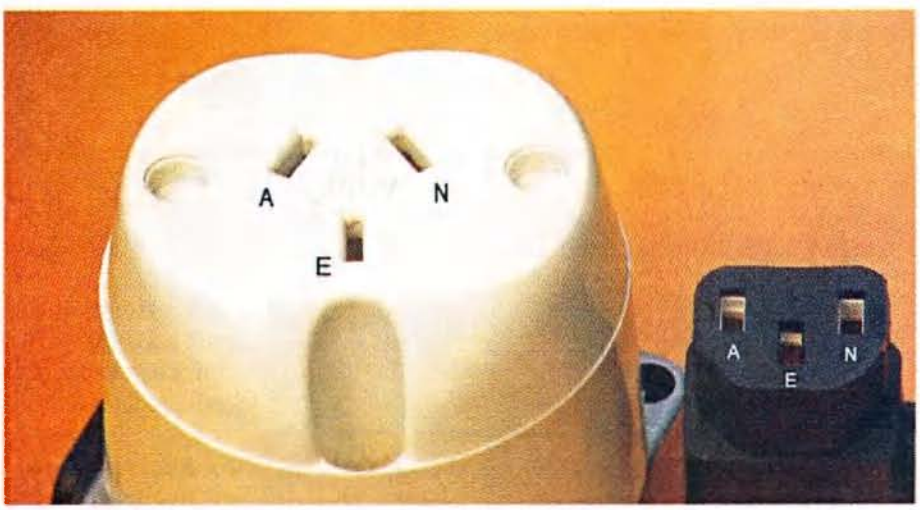


Photo 5: A simple way to determine the correct pin designations for sockets.



Photo 6: The correct pin designations for plugs.



Photo 1: The final assembled IEC filter – mains adapter.

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News from

VK2

Orana Region Amateur Radio Club at "The Dish"

Saturday 18 July and Sunday 19 July 2009)

Ross VK2WN reports on the dish:

I got to the Parkes Radio Telescope on the Saturday at about 8 am. It did not take too long for me to meet up with other Orana Region ARC members. They were David VK2CDH and his XYL Lyn VK2FLYN, James VK2LQZ and XYL Petria VK2FERE, Reg VK2TRE and his XYL and Ken VK2AGW.

It was beautiful and sunny with almost no wind but the temperature was quite cool. People were already lined up and ready to do the telescope tour.

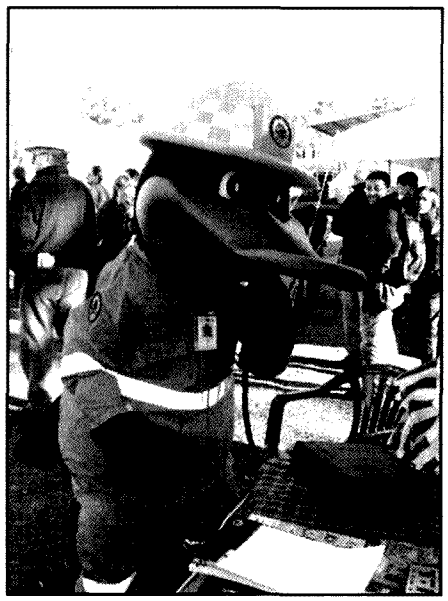
In the process of setting up we had to walk past the people lined up as we carried the radio-related gear from the car park. I had done the tour a couple of times in the past few years so was not particularly interested in it and besides today was about celebrating the Parkes Radio Telescope's involvement in the moon landing 40 years ago and the promotion of Orana Region Amateur Radio Club.

Parkes is an important place for me for a number of reasons. Firstly it was where I was born 44 years ago and secondly because I now live only 90 kilometres north of there at Narromine and have done so for almost seven years.

The Parkes Radio Telescope opened its doors for the weekend of 18 and 19 July, to celebrate the 40th anniversary of man walking on the moon.

Over the weekend, they welcomed 6,500 visitors. Many enjoyed a tour of the telescope, helicopter flights, and staff on hand to explain the trial Square Kilometre Array telescope destined for outback Western Australia.

On Saturday, the queue for the telescope tours was 300 metres and three hours long, right past the ORARC stand. The "captive" audience was treated to conversations with David KE5YGI from Houston Texas USA, via 2 metres IRLP, as well as local chatter on 2 metres. Even Paddy Platypus, the local SES mascot, was in on the action (Photo 1). David, Lyn, James, Reg, Ken and Ross enthused about the hobby to anyone who would listen.



Paddy Platypus, the local SES mascot, was in on the contact action to Texas. Was it KE5'Charlie Coyote" on the other end?



One Laptop per Child computers, available for hands on exploring, including testing the capabilities of the laptop's antennas, were a great attraction.

Meanwhile, Petria VK2FERE and James VK2LQZ had five of the One Laptop per Child computers available for hands on exploring, including testing the capabilities of the laptop's antennas (Photo 2).

Thanks to David VK2CDH for organising the event. He did such an impressive job that he was elected Club President at the AGM the following weekend. Congratulations!

Thanks to the Parkes Radio Telescope for inviting the Club, and for giving us permission to transmit.

Photos by David VK2CDH

ar

More VK2 news on page 30

SHEPPARTON AND DISTRICT AMATEUR RADIO CLUB

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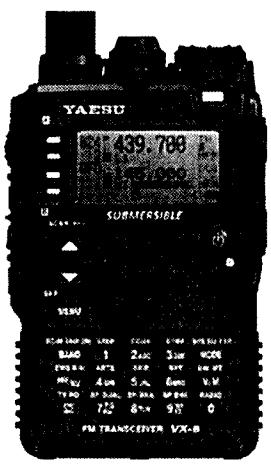
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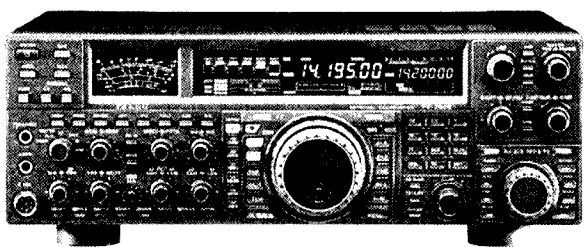
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Silent Key

Richard (Dick) Bedford Leslie Adams VK3LN (VK3ADA) Aged 80

14 October 1928 to 24 February 2009



Dick was born in Brighton and after his Mum died when he was seven years old, he moved to Glengarry to live with his aunt. It was during the stay at Glengarry that his appetite for country life, hunting and shooting was born.

He later returned to live in the Brighton family home until 11th December, 1945, when at age 17 he joined the Royal Australian Navy.

By October 1946 he had completed his Telegrapher's Course and received his first posting to HMAS Harman, a land based communications station in Canberra. Three months later he was on the Hobart, where he spent 10 months as part of the Japanese Occupation Force.

Dick's eleven years service in the RAN is strewn with berths on many ships, including a brief stint attached to the Royal Navy on HMS Glory, whilst awaiting his posting to HMAS Sydney at the end of 1948.

January '51 saw him back at HMAS Harman for seven months, before rejoining the Sydney again, this time seeing action during the Korean War.

Several ships (and years) later, Dick came ashore and served as a Telegraphy Instructor, until paying off for the last time at the end of 1957.

Navy life had suited Dick, he enjoyed the challenges and the companionship that he was presented with at sea.

He entered and remained in the electronic industry after leaving the Navy.

Using his wireless and electronics expertise gained in the service of his country, Dick quickly moved into the rapidly expanding television industry, working for several leading companies, including Sharp and Philips.

A couple of addresses later saw Dick and Barbara settled in at Wellard Road, Box Hill South, and from that address they shared many adventures.

Both had a love of jazz, family life and country trips.

These country trips included many jazz concerts, but were sometimes used for scouting sorties as far as Dick was concerned, he was always on the look out for new dams and lakes that might offer up a duck or two, during the official season of course, or somewhere new to throw in a line.

Emphysema caught up with Dick 20 years ago and he was forced into early retirement, but his enthusiasm for wireless and the latest electronic gadgetry continued unabated.

He joined our Club and was a very active member until the emphysema began to really take its toll.

Dick was very generous with his time, especially helping and coaching those with an interest in learning CW.

He was also a very stubborn and proud man, who continuously rejected offers of help with things like his oxygen bottle, which had become a constant companion over the past couple of years.

Up until recently he was still enjoying the Friday lunches, and the camaraderie that went with them, at the Knox Club.

Dick is survived by his wife Barbara, numerous children, stepchildren and a large extended family.

Dick will be sadly missed by those of us who knew him, and called him friend.

He will be remembered by his country for services rendered during the Occupation of Japan and the Korean War.

Fair winds and high tide on your final voyage Dick.....

Rest in Peace.

Carl Schlink VK3EMF, EMDRC.

Sods Law

The twelve steps in understanding Sods Law for transmission lines and wire antennas

R Johnson VK5ZRJ

1. **A single length of uninsulated plain wire of any metal will inevitably develop a kink.**
2. **A single length of insulated wire or coaxial cable will inevitably develop a knot.**
3. **Two or more lengths of any cable or wire will, if in close proximity, invariably mate and be impossible to separate without knots or kinks.**
4. **All coaxial cable is invariably 4 inches too short to reach where it was supposed to.**
5. **All RF connectors have an intermittent fault.**
6. **All coaxial cables have a break or short somewhere along their length.**
7. **The above two faults do not become apparent until installation is complete.**
8. **When calculating antenna or line lengths the speed of light is a variable.**
9. **Transmission line efficiency is inversely proportional to the number of times you close the car door or mow the lawn.**
10. **All coaxial cable is invariably supplied with the wrong connectors.**
11. **Characteristic impedance is a myth.**
12. **SWR bridges are fine going forward, but if you try to go back, they're burnt.**
13. **It is impossible to raise a wire antenna into the air without bringing the ground up with it.**

VK2HRX/p Mt Kosciusko summit, Easter 2009

Compton Allen VK2HRX

Since getting my licence a few years ago I have always been interested in portable and mobile operation. The opportunity arose in conjunction with a family Easter camping trip to Jindabyne to try some portable operating on the summit of Australia's highest mountain Mt Kosciusko, at 2229 metres altitude. Before I loaded up the pack and headed up the track there were a few things to plan for. What frequencies to operate on, what modes and what radio, antennas and batteries.

I knew from talking to others that operating on Kosciusko was fairly common but I guessed that most did it with a hand held. So I thought I would try for something a bit more substantial.

I chose to take a Yaesu FT-857D to give me all modes and all bands with reasonable power and I coupled that with 12 V 18 Ah SLA battery and a Tokyo High Power Labs HC-100AT tuner.

I have previously used this battery for QRP operation for at least four hours. I calculated that I would get close to two hours use from it at higher power. As this was about the time I had to spend on the summit this seemed OK. Anderson power poles and a four way manifold made setting up very quick and easy for the power connections.

For antennas I took an Arrow 2 metre/70 cm crossed Yagi as described at http://www.arrowantennas.com/146-437.html It is a delightful antenna to use hand held as it is light and I have made a canvas roll bag for it so each of the elements and boom have their own little pouch to protect them when being transported.

This proved to be excellent and was easy, of course, to change from vertical to horizontal polarisation. I bypassed the 10 W duplexer built into the handle and connected the feed line from the radio directly to the 2 metre element. My son, Taylor VK2FTEC, made a great voice controlled rotator.

For HF I wanted to operate on a few bands so I chose a G5RV. To erect it I used a squid pole. My squid pole is around 7 metres so I selected the ½ size G5RV which has a feeder line length of around 4.6 metres. Using a 300 Ohm feeder on a G5RV means the feeder is slightly shorter than if using a higher impedance feeder, so this was a useful consideration as I was planning on erecting it as an inverted V in a treeless location. The ½ size G5RV works on 40, 20 and 10 metres with a tuner. As I was operating during the day not having 80 metres was not an issue. So I built the one described at http://www.jackclarke.net/g5rvhalf.htm

There are two ways up to Kosciusko on foot, via Charlotte's Pass and from the top of the chair lift that departs from Thredbo. The Thredbo route is about 5 km shorter for the round trip and the height to climb is also less, so I managed to convince the rest of the group with me that we should make the trip from Thredbo.

Total distance is 13 km for the round trip and the height to climb is only a few hundred metres. I gave myself two hours each way for this, which was about right. If you did not stop to look at the views then you could do it comfortably in 90 minutes each way. Mt Kosciusko is more of a bump or mound than a mountain peak which is what makes it so popular, that and the raised steel mesh track for 95% of the way.

In good weather it is an easy walk. If the weather clouds in or worse then it would be a serious walk especially if you are not well prepared. It is important to get back to the top of the chair lift for the trip down by 4:29 pm as it is an additional 5 km walk down the range if you get there after the chair has stopped.

The trip up the chair lift was pleasant. I chatted away to my daughter Courtney VK2FUNI about the nature of the vegetation as it changes from sub alpine to alpine around the top of the chair lift, which means there are no trees of any sort on the summit.

So having got myself and all the gear up there it was time to get on air. I had to move away a little to get a spot to set up so I was safely away from the others sharing the top of Australia. I started out on 2 metres and looked around with the 2 metre beam to see what repeaters I could access using 20 W. I started to write them down but there were so many I gave up. This would be a great place to try repeater DX.

I did work a VK5 via a repeater in Western VK3. I was also able to access the High Range repeater near Mittagong, south of Sydney. This repeater gives good coverage though Sydney so I could have easily had a QSO with the VK2's in Sydney.

Next was 2 metres at the bottom end of the band, on 144.100 MHz USB with 50 W, and swinging the beam around. I was able to make a few contacts into some local VK2s and VK3s in SE Victoria.

Then I erected the G5RV. Two wires fitted with plastic insulators were simply pulled apart and then tied to a rock on the ground with a short piece of nylon cord. These helped to hold the squid pole up to support the feed point, as high as was possible. The bottom of the squid pole was simply wedged into some of the many rocks on the ground.



G5RV as inverted vee using a squid pole.

I then tuned up the G5RV on 40 metres and called CQ on 7.070 MHz. I got an immediate response from stations far and wide! Having an S0 noise floor meant I could hear all of them. I spent the next 30 or so minutes working my way through every one who wanted to make contact with a station on the top of Australia, until my battery finally went flat.

The ranger took a triple look at the squid pole on my pack when I met him on the way back down. He told me he estimated 1,500 people had walked to the top that day, with around two or three hundred people on the summit at any one time; a constant stream of people.

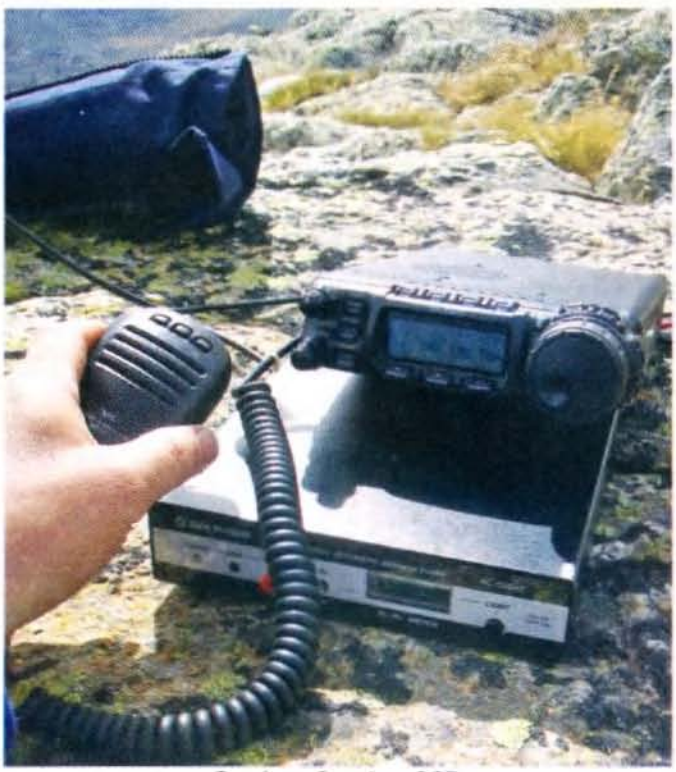
If I were to do this again I would definitely take a second battery and I would use lower power. I suspect the 100 W on 40 metres was far more than required, as I was getting 59+ signal reports from nearly everyone.

It would also be interesting to also take some high band gear and try, say, 23 cm or higher. One station asked if I had anything higher than 2 metres to try, which got me thinking. The Icom IC-910H would not be that hard to put safely in a pack. So I guess I would also need a larger pack than a day pack.

I would also plan to be on the chair lift as soon as it opens to maximise the available time on the summit and to give myself some time to try some other HF bands. I am sure CQ DX on 20 metres from the top of Australia would be attractive to many. There were a couple of people flying some large kites very successfully. Now there is an idea for the HF antenna next time!

For all those who contacted me thanks, you are in my log and I look forward to working you when I am again portable somewhere interesting.

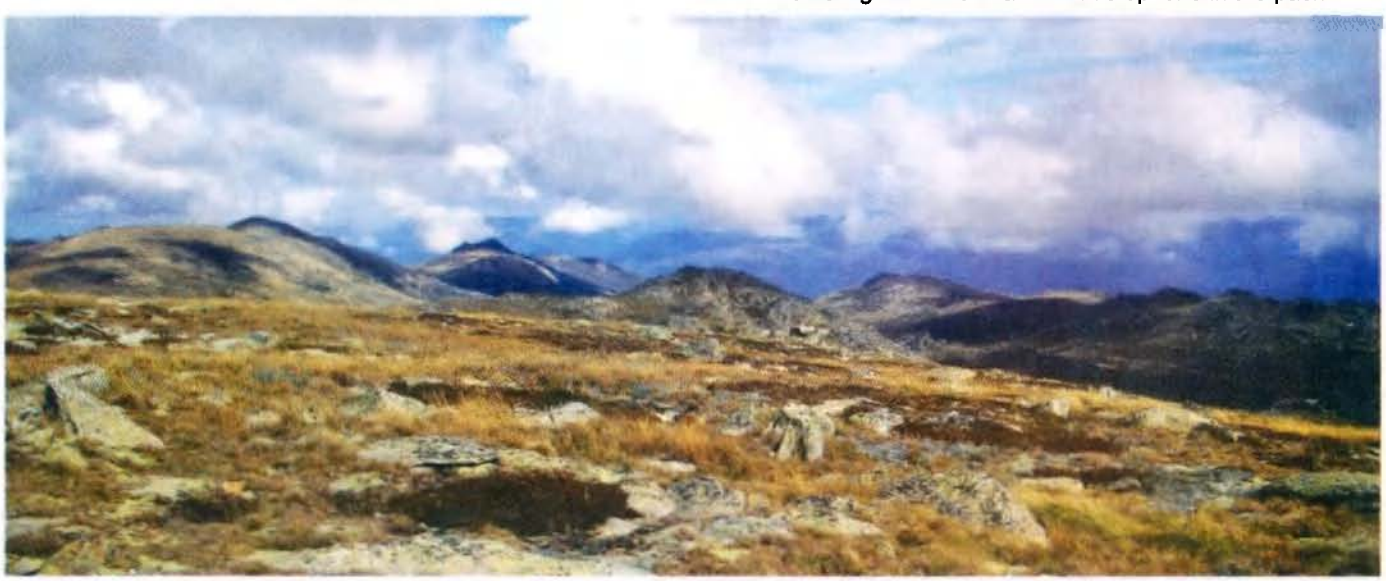
ar



On air on 2 metres SSB.



Protecting the radio head and microphone in the pack.



Looking towards VK3 land.



The portable set-up: antennas, radio, tuner, power and pack. Note especially, at about 5 o'clock in the photo, the power pack for the voice activated antenna rotator shown in the front cover picture.

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Frequency range RF	1296 ... 1298 MHz	2320 ... 2322 MHz	3400 ... 3402 MHz	5760 ... 5762 MHz	10368 ... 10370 MHz
Output power	min. 400 mW	min. 1000 mW	min. 200 mW	min. 200 mW	min. 200 mW
Noise figure @ 18 °C	typ. 0.8 dB NF	max. 0.8 dB NF	max. 0.9 dB NF	max. 1 dB NF	typ. 1.2 dB NF

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More information: www.db6nt.de

General technical data

Frequency range IF	144 ... 146 MHz
RF input power	max. 3 W
Receive gain	0 ... min. 20 dB
Supply voltage	+12 ... 14 V
Coaxial connectors	SMA-female

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News From

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

The **Summerland ARC** has just finished a month of celebrating their 50th anniversary which included use of the special call VI2SRC50. Also during the month they held a dinner and conducted SARCFEST and held courses and exams for all licence grades.

The **Fishers Ghost ARC** is preparing for the next Jamboree to be held during January 2010, advises their President Wal Kelly VK2ZWK. The FGARC are the caretakers of the Amateur Radio Shack located at the Cataract Scout Park – the site for the Scouting Australia Jamboree – AJ2010. The Jamboree is from 4th to 14th January. Amateur operation is being planned for all bands between 80 metres and 70 cm. Fishers Ghost is seeking expressions of interest from Clubs and their members from in and around Sydney to assist during the daytime. If you can help, contact Wal on vk2zwk@wia.org.au or telephone 02 4626 8423.

The **Oxley Region ARC** held their AGM at the beginning of last month. Incoming office bearers are President Henry Lundell VK2ZHE and Jim Neil VK2VIV as Vice President. No one put their hand up for Secretary so Jim VK2VIV, the outgoing Secretary, will act for the moment. Treasurer is John Bailey VK2KHB and committee members are Alan Nutt VK2GD, John McLean VK2KC and Bill Brooke VK2ZCW. ORARC meet on the first Saturday afternoon and the fourth Friday evening at the SES building in Central Road, Port Macquarie. They conduct Foundation and Standard training courses in both Port Macquarie and Wauchope and interest in attending can be registered by mail to P. O. Box 712 Port Macquarie NSW 2444. Check out their web site at www.orarc.org

In late June Foundation exams were conducted in the **Orana Region** in VK2's Central West with many attending the weekend.

The **Hellenic Amateur Radio Association** conducted a DXpedition to Norfolk Island in late July. The week long operation logged over 12,000 contacts on all bands from 160 to 10 metres advised team leader, Tommy VK2IR. There was also operation for a day in the RSGB IOTA contest, netting some 650 contacts. HARA meet at the St. George Sailing Club in Sans Souci (Sydney) and contact can be made with VK2IR on 0413 005 511 or check the web site www.haraoa.com The next trip being planned is to Broughton Island OC-212 late this year.

NSW WICEN has upgraded their website to allow members to have access via their own callsign and a password. Contact Webmaster Mark Cheeseman VK2XGK or the Secretary. Some activity coming up could include this month (19th) in the Kangaroo Valley. In October there is the annual search for the missing aircraft VH-MDX over the weekend 17/18th and the Hawkesbury Canoe Classic the following weekend. In November, Hunter Region is to provide safety communications to the Great North Walk on the weekend of the 14th and 15th. Contact with NSW WICEN is via the Duty Operator 0408 397 217 or email to operations@nsw.wicen.org.au

The **Blue Mountians ARC** held their annual Winterfest last month at their new meeting location, the Nepean VRA in Orchards Hills (near Penrith). By the times these notes appear some members of the Club will be on a DXpedition to Poeppel Corner, advises John VK2QN, from August 29th to September 12th. Poeppel Corner is in the Simpson Desert where VK4, 5 and 8 intersect. The DXpedition has been named "PC-09". They will be using HF and satellite gateways back to a central computer so you can follow their progress. There is also HF contact to base stations located in Melbourne, Sydney and Brisbane. For all the details go to the BMARC web site www.bmarc.org/pc-09.php

August must be AGM month for besides **Oxley Region** on the first Saturday, there was the **Mid South Coast ARC** on the second Saturday and the **Illawarra ARS** on the second Tuesday.

The **Hornsby & District ARC** regularly conduct exams in Sydney's north. Details on their website www.hadarc.org.au They have recently added twitter to their information sources – check out www.twitter.com/VK2MA

St George ARS have added a SSTV segment at the end of the Thursday evening net on VK2RLE 6800.

Hunter Radio Group meets at NBN Television in Newcastle on the second Friday evening. They also provide a Monday evening news net with segments of VK1WIA and VK2WI content.

The **IPS Radio & Space Services** are conducting their annual Sydney HF Radio Propagation Course on September 3rd. These are also conducted in other capital cities – check out www.ips.gov.au/Products_and_Services/2/2 or 02 9213 8034.

Half a year to the **Central Coast** field day at Wyong on Sunday 28th February 2010. The CCARC are seeking assistance with the operations on the day, advised Ray VK2HAY. Ray advised that they can fit in more "Flea Market" Stall Holders, so now is the time to make your move. They will be announcing other attractions later.

The next **ARNSW** Trash & Treasure is the last Sunday of this month (27th) at the VK2WI Dural site (63 Quarry Road). Major items on offer are listed on the web site www.arnsw.org.au in the week leading up to the event. The T&T commences about 10 am. Boot sellers and traders are most welcome. The sausage sizzle is conducted on the new BBQ, along with cool drinks or get a cup of tea or coffee with plain biscuit from the VK2WI shack. In the afternoon the Radio Homebrew and Experimenters Group conclude the day with their show and tell and a technical lecture/demonstration. ARNSW provides a service for your preloved gear or Deceased Estates to be offered through the T&T operation. Donations of surplus equipment are also most welcome. Contact can be made via the office phone (and its answering system) on 02 9651 1490.

News submissions for VK2WI News should be sent by Friday evening to arnews@tpg.com.au You will receive an automated acknowledgement that

Continued foot of next page

VK3

Geelong Amateur Radio Club - The GARC

Tony Collis VK3JGC

Winter Solstice Dinner

This year the GARC had probably its biggest turnout of members and partners ever, complemented by six members from the Geelong Radio and Electronics Society including their President John VK3LJS.

During the dinner two presentations were given; the first by Barry VK3SY on Antarctica dealing with the Mawson expedition in 1911 and the involvement of Walter Henry Hannam.

Walter Henry Hannam was wireless telegraph operator for Mawson's 1911–13 Australasian Antarctic Expedition to Commonwealth Bay in Adélie Land. Aged 26 years, with a science diploma, Hannam was already a figure among radio experimenters, playing a key role in the establishment of the Wireless Institute of Australia. The opportunity to pioneer radio transmission in Antarctica was irresistible to him: he spent two summers and a troubling winter at Cape Denison, at times also acting as mechanic and assistant magnetician.

In February 1913 stable contact was made with Macquarie Island and Hannam exchanged the first major messages by radio telegraph from Antarctica. Both were news of tragedy. The first news Hannam's radio received was that Scott's party had perished while returning from the South Pole, defeated in their race with Amundsen. Hannam then transmitted Mawson's report of the deaths of his companions, Mertz and Ninnis, during their eastern survey of George V Land, and of Mawson's near fatal, lone sledge journey back to Cape Denison.

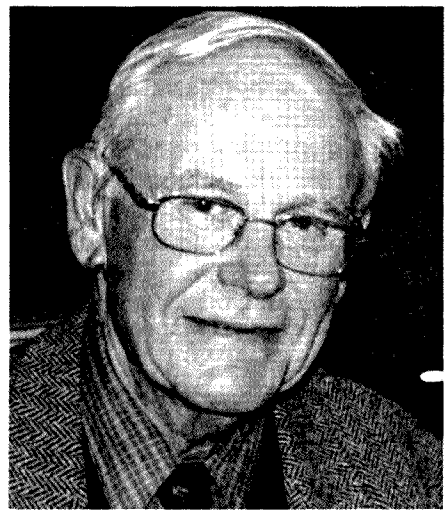
To amateur radio enthusiasts, Walter Hannam was well known by his call signs: VK2QI, VK2YH and VK2AXH.

He was a founder member of the Australian Wireless Association and actively involved until his death in 1964.

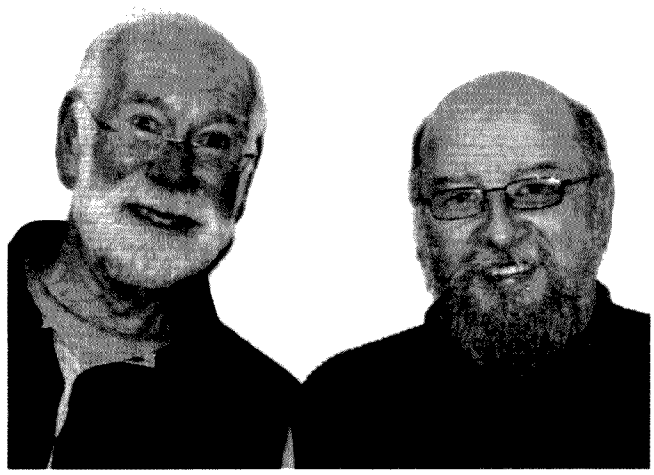
Barry sent an email with greetings and best wishes to Bob VK0BP, the only VK0 currently in Antarctica at Davis Station Antarctica, on their Mid Winter Celebrations. Bob responded with a long e-mail back to the GARC which Barry read out in its entirety.

The second presentation was by our guest Rod MacKenzie, assisted by his wife Pauline. Rod had a very interesting life attending the Geelong High and the Gordon. He has been a tradie, Plumbing Inspector, Educator, Parliamentarian, President of Victoria's Legislative Council and an Antarctica Expeditioner a number of times. He was awarded the Order of Australia Medal for services to the Community and the Australian Antarctic Program. Rod's talk dealt with some of the sociological problems they endured in the 70s with the communication limitations imposed on them: personal communications once a month with a severe time limit, and how the role of amateur radio enabled them to increase communication with family and friends. Rod has written a book on his experiences.

ar



Rod MacKenzie



Presidents' John VK3LJS and Dallas VK3DJ

VK2 News

it has reached the inbox of the news compiler John VK2JV. All VK2 clubs are most welcome to submit items about their club and activities. Individual submissions are also most welcome. Would those doing so please write in the 'third person' and format it so the announcer can make it flow when reading. There are some submissions that need to be edited. The broadcast times and frequencies are to be found on the inside back page of *Amateur Radio*. The text (evening) version of the news is posted to the ARNSW web site www.arnsw.org.au on Monday following that weekend. Text for the previous few weeks remain on the site.

The long running **VK2BWI** Morse training is now down to a Thursday evening on 3550 kHz provided by Ross VK2ER at Orange. Ross would welcome feedback via the callbacks at the end of the session as well as offers of assistance to provide additional nights.

73 – Tim VK2ZTM. ar

More VK2 news on page 24

News from

VK3

Ross Pittard VK3CE
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

A lot of behind the scenes work is continuing to be done by our team of dedicated volunteers to upgrade our repeater and broadcast network. The broadcast network has been restored to both Mt Baw Baw VK3RWG and Mt St Leonard VK3RMU repeaters, dramatically increasing coverage on VHF and UHF.

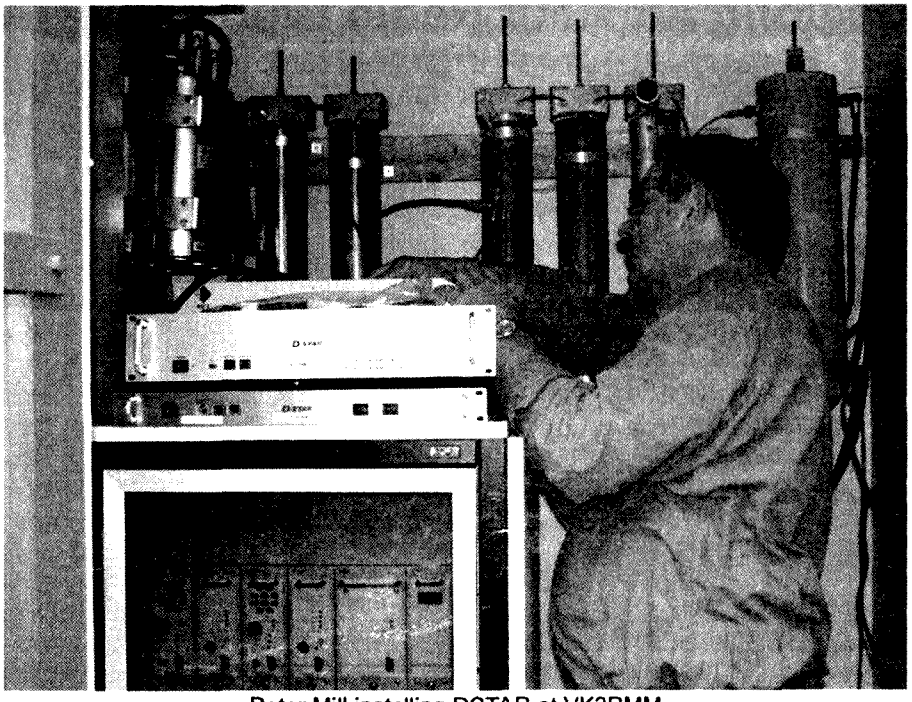
The Icom donated D-STAR repeater on Mt Macedon VK3RMM is fully operational on both 2 m and 70 cm and has a wide coverage area. Stations from Echuca, Bendigo, Shepparton, Geelong and Pakenham have been heard. By the time you read this the internet gateway should be operational on VK3RMM D-STAR. The Council would like to acknowledge the work of Paul Engler VK3XDE for providing a time-consuming yet cost efficient solution to site technical difficulties, and Richard Hoskins VK3JFK for initialising and programming work required for the internet gateway facility.

Work is still in progress at Mt William VK3RWZ and it is hoped that programmed tower work will be completed in the coming weeks, thus restoring another important link in our repeater network. Your Council believes it is vital to restore this site as soon as possible but factors outside our control have prevented this from happening any earlier.

Thanks to the work of Peter Cossins VK3BFG, the digital upgrade of the Melbourne ATV repeater VK3RTV is in its final stages with the change over of the transmitter and associated control equipment programmed for completion this month.

We are also pleased to advise the return of the highly popular Centre Victoria RadioFest to be held once again at the Kyneton Racecourse on Sunday 14th February 2010 – gates will open at 10 am. Currently we are looking for volunteers to present small talks on any aspect of our hobby, if you could help us please contact the organising committee at radiofest@amateurradio.com.au

Visitors to the rooms at Ashburton will have noticed a redesign of our office space; this was done to enable classes and small meetings to be held in a more comfortable atmosphere while not disturbing the essential office functions. We have also commenced the re establishment of a permanent station at the rear of the office so have a listen on the bands for VK3WI, we do QSL!



Peter Mill installing DSTAR at VK3RMM

The next weekend training and assessment session for the Foundation Licence will be September 26 & 27; the venue will be 40g Victory Boulevard, Ashburton. For inquiries or to enrol please contact Barry Robinson VK3PV on 0428 516 001 or foundation@amateurradio.com.au

With spring now with us and warmer weather ahead, it is a good time to venture out and operate amateur radio portable.

Listen out for those visiting the more than 40 National Parks in Victoria and participating in the Keith Roget Memorial National Parks Award. Full details can be found in the Awards section of the Amateur Radio Victoria website.

Why not join and support the state-wide organisation Amateur Radio Victoria? It costs $30 for Full or Associate membership and $25 Concession, for two years. New members are most welcome and an application form can be found on our website or will be posted out on request.

ar

Amateur Radio Victoria

Centre Victoria RadioFest No. 3

This major amateur radio event is on Sunday 14 February 2010. At the Kyneton Racecourse an hour from Melbourne, Ballarat and Bendigo.

Proudly supporting the WIA centenary celebrations.

Sales space bookings and more info:
www.radiofest.amateurradio.com.au

VK6

Keith Bainbridge VK6RK

HAMFEST largest WA event (in radio anyway)

This month's column will be mostly taken up with a Hamfest report, seeing as it was yesterday (2 August) that it happened and it is fresh in my mind.

The Northern Corridor Radio Groups Hamfest is the largest event on the social calendar in Western Australia. We used to be able to say it was the only event but the revitalised activities of HARG and their successful sale held earlier this year could one day give the NCRG a bit of competition!

Like any event it takes a lot of planning and after 23 years you would think it would be easier, but it varies every year. We never really know until a few weeks before which traders will be making the trip from the east; we always have lots of interest from 'over there' but financial realities often dictate the decision being deferred until better economic times.

We have been delighted with the support from Yaesu over the past two years with Peter VK3TE making the trip and putting a lot of effort into the display. Icom Australia was also very helpful with the donation of a prize and representation by their agent in Perth, Tower Communications. Yaesu are represented by Tower Communications and City Online/Hamshack.

Geoff and Kylea made it to the Hamfest pre event dinner at Ham Heaven as did Peter VK3TE. The pre-event dinner has become a bit of a tradition on its own and any traders contemplating a visit should allow the extra time to come along to a great free feed at the clubhouse the night before the event. The other traders, who have all supported the event for several years were Terlin Outbacker, Bushcomm and Allcom. All reported brisk trading.

On the day 60 tables were laid out in the main hall and all were rapidly filled. There is no charge for tables at the show, but every person attending is charged the entrance fee of $5, including all club members, to keep it fair. There were a few grumbles about that but you get the table free! Try getting that at other Hamfests around the country.

This year the groups represented were Hills ARG, Peel ARG, VHF Group, WA Repeater Group and Scouts Australia. Unfortunately there was no WIA stand this year with Bob VK6POP being up north working. Maybe next year!

This years raffle prizes were donations from six of the traders present and were as follows with the winners' details:

STOP PRESS

We are delighted to announce that we are now a Kenwood dealer. Talk to us and listen to the future.

We are the WA agents for these famous

QUANSHENG

KENWOOD
Listen to the Future

VIBROPLEX

WiNRADiO

Vertex Standard
AUSTRALIA

And a few words about the Quansheng

".. solid and rugged ...comfortable to hold...the audio qualities are superb! This is one of the nicest sounding handheld radios ...

For $100 (yes, Australian Dollars)...this radio represents absolutely phenomenal value.

.....The Quanshengs come highly recommended by me; I am sure you will be tickled by just how well these radios work for the money!"

WA's new Yaesu Dealer

We have the famous VIBROPLEX Morse keys

Geoff White (VK6NX) 08 9498 1157

116 Amethyst Cres, Mt Richon, WA 6112

Payment via Paypal, Cheque or Bank Transfer.

All details and a description of our other great products on

www.hamshack.com.au

email worm_hole@optusnet.com.au

Handhelds 2 m or 70 cm

LOCKED OUT FOR HAM BAND ONLY

144 TO 148 MHz (VHF)(2 m) OR 420 TO 450 MHz (UHF) (70 cm)

SIMPLEX & DUPLEX

$119 delivered in AUS

Sorry about the price rise, but its not us, it's due to the Aussie dollar collapse

STILL GREAT VALUE.

We have soft covers for $17.00



SPECIFICATIONS:

1) Voice Prompt on Keypad
2) CTCSS with 39 codes
3) 99 Storage channels
4) Auto scan
5) Large screen LCD
6) Back Lighting
7) VFO programmed (input freq. from keypad)
8) Hi & Lo Power select
9) Channel spacing: 5 kHz, 10 kHz, 12.5 kHz, 25 kHz
10) Keypad lock
11) Monitor function (input frequency)
12) Low-battery warning
13) Frequency Modulation
14) Auto power save
15) Output power: 4 – 5 W
16) Large-capacity battery
17) Ear/microphone auto-charger connections

Extra Battery (1500 mAh)	$17
Speaker Microphone	$12
Headset/Microphone	$8
SMA to BNC Converter	$5

$7 shipping charge on Items ordered separately

Yaesu VX-170 Handheld donated by Yaesu and won by Des VK6HDM.

Icom PS-300 power supply donated by Icom Australia and Tower Communications and won by Mick VK6IN.

Outbacker OB-8 Mobile antenna donated by Terlin Outbacker and won by Noel VK6BJ.

Solder Station donated by Alek VK6PY and won by Steve VK6CS.

Bushcomm SWC-100 antenna donated by Bushcomm and won by Wayne VK6EH.

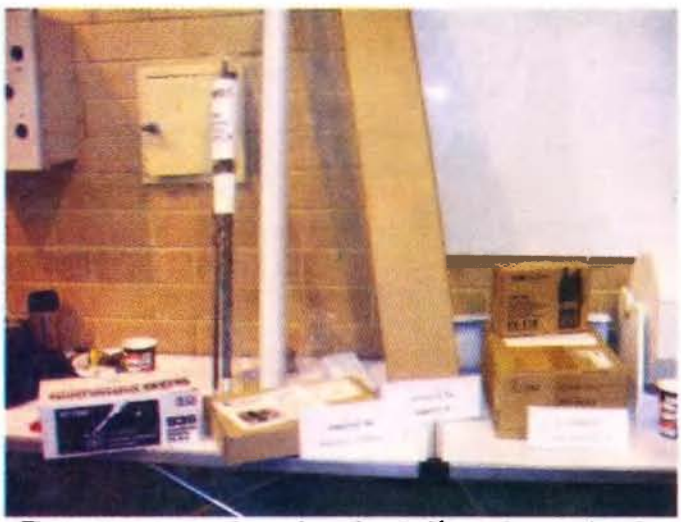
Hamshack 23 cm Yagi donated by City Online and won by Des VK6HDM (again!).



Both Icom and Yaesu were well represented at the NCRG Hamfest, through their local agent Tower Communications.



Some of the large gathering hunting for a bargain at the NCRG Hamfest.



The very generous door prizes donated by various traders for the deserving who attended the NCRG Hamfest.

Kalgoorlie certainly did well as three of the prizes headed inland! The raffle was drawn by Wes VK6WX, the President of the Southern Electronics Group, in his dual roll as an NCRG member. Hopefully a couple of the pictures turned out well and, with the support of the Editor, can be seen here.

One thing that the Hamfest is famous for is the food. Once again the roast beef and gravy rolls, hot dogs and delicious home made cakes sold out with everyone commenting on the quality, especially of the cakes! The kitchen was very efficiently run by Maryanne (XYL of Alek VK6PY) and Gina (XYL of Barry VK6HX), with Ian VK6ZIC hovering around in the background. The food hall serves as a good meeting place to catch up with the on air contacts we only get to see at Hamfest.

This year's attendance was similar to last, with 384 people through the door before the admission table was abandoned to allow those who had patiently sat there to have a look around at last. Considering the estimate of active amateurs in Western Australia is about 300 then almost everyone must have been there.

One of the most pleasing things I noticed personally was the large number of Foundation calls present on the day. There appeared to be so many more than I had seen before so something must be happening out there. Some had their callsigns knitted into their jumpers; that certainly caught the eye.

A lot of junk, sorry, pre loved equipment seemed to change hands with Fritz VK6UZ once again filling six tables with all

Continued at foot of next page



Peter VK3TE presents the Yaesu VX-170 HH prize to Des VK6HDM, at the NCRG Hamfest.

ALARA

Aysha Venugopal VK5FASH

Badged

It is not every day that ALARA office bearers get their badges in person and it is indeed a lovely thing when it happens.

However, first time ALARA secretary Marisa VK4FMAR received a nice surprise at a recent dinner organized for Gold Coast and Brisbane amateurs. There were at least 10 ALARA members and a number of YLs at the dinner.

Among the attendees was Susan VK7LUV who was visiting family in Queensland. Current ALARA librarian and former secretary Susan took the opportunity to present Marisa with her badge. So much nicer than getting it in the post!

ALARA anniversary

July marked the 34th anniversary of ALARA and each of the VK clubs celebrated in their own way. The YLs of the VK3 ALARA group decided to make it a day at the movies. Jenny VK5ANW/3 and Peter VK3RV hosted the event at their home in Sunbury and treated the group to an afternoon at the cinema.

It was going to be a soup and sandwiches afternoon, according to Jean VK3VIP. However, it turned out to be a huge spread with a chocolate mud cake for a birthday cake, a Pavlova with fruit and cream, three different soups and lots of snacks and cakes. It was enjoyed by all present, many of whom came with their OMs.

After lunch, it was time for the cinema and a number of couples took advantage of the seats in the dress circle. A lovely afternoon's entertainment followed that included a proper usherette in the interval with a tray of goodies. Dianne VK3FDIZ looked lovely in a uniform. The highlight of the event was the special guest "Miss ALARA".



VK3's 'Miss ALARA' looks all bright in yellow and gets her place in the dress circle for ALARA's birthday celebrations. That's Di VK3FDIZ holding Miss ALARA. Di is also one of the staff at WIA head office.

The YLs of the VK5 ALARA group celebrated with a lovely Sunday afternoon lunch on July 26 at the Morphett Arms Hotel. It was well attended by 12 YLs, six OMs and three harmonics. There was a lot of excitement over the forthcoming International YL Meet 2012 and the plans for a special trip on the Ghan.

IOTA award

For YLs who love a challenge, the ***1000 Islands On The Air*** award is a prize to decorate the shack with. Elizabeth VE7YL, a long time sponsored member of ALARA, should be on the next listing of the IOTA Honour Roll having finally confirmed her 1000th IOTA contact recently. Her efforts are an inspiration to many other YLs as this award is not an easy one to complete.

The top station in the IOTA 2009 Honour Roll had worked 1075 islands. The top VK station on the roll was the late Jim Smith, VK9NS, who was listed as having 1000. The award is managed by the Radio Society of Great Britain.

The challenge is to work licensed amateur radio stations operating on the islands listed in the RSGB IOTA directory. There are 21 awards listed and most amateurs start their collection with the basic IOTA 100 Islands of the World award with subsequent awards as the tally increases. The IOTA 750 Plaque of Excellence and the IOTA 1000 Islands Trophy are any collector's dream. Rules are on RSGB IOTA website www.rsgbiota.org

Elizabeth VE7YL, an avid amateur, is frequently heard on the 222 Net on a Monday afternoon, particularly during our summer. She is a pioneer Canadian wireless YL having got her commercial radio ticket during the war. She worked as a "sparks" on two Norwegian ships, one of the few Canadian YLs to have done so. For this YL who usually works CW, the 1000 IOTA award is yet another feather in her cap.

ar

News From VK6 continued

those hard to get connectors, parts and especially UHF/SHF equipment.

There were visitors from far afield, one being Reg G8VHI, one of the leading lights in the UK in the VHF and up areas. I had a few chats with him about the differences between Hamfest and the UK rallies and the lack of VHF/UHF/SHF weak signal operating in WA.

All in all a very tiring but rewarding day for members, how else can we finance Ham Heaven in Whiteman Park? Most people seemed to find that elusive bargain and had a smile on their face when finally leaving the venue, ready for next years foray, I hope!

The Hamfest committee, most efficiently run by Wayne VK6EH, our club President, would like to thank all who came and particularly all those who helped to make Hamfest 2009 a big success. Next year's event will be at the same venue and is already booked for Sunday 1 August, 2010.

Finally for NCRG news, next March, on Sunday 14th to be precise, the NCRG will celebrate the WIA Centenary with an open day at Ham Heaven. There will be a BBQ, car boot sale and a meet and greet with guided tours of the facility! We look forward to seeing you all there.

Next month we will resume our normal service of statewide news, if I get any that is. Thanks again to all who came to Hamfest, and to those who didn't get there, well you really missed a great day.

73 from cool, but sunny, Perth.

ar

News from



Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

SCARG

With a group consisting of 65 mature and experienced amateurs, the South Coast Amateur Radio Group is still going well and enjoyed a couple of recent birthdays. Ken Ayers VK4KD and John Gillard VK4AJG were both celebrating. The SARG HF net is held on 3.605 MHz Thursdays at 1930 hours: Call in and say hello.

CHARC

Central Highlands Amateur Radio Club will be holding an AGM on September 25th, 26th and 27th at Camp Fairbairn (Lake Maraboon).

Accommodation is available, dormitory style, so bring bed linen, blankets and pillow. Charges are the same as last year: $13.20 per night per person, day visitors $6.60. Charges are as set by the Department of Education. CHARC has no control of the fees or of the regulations set by the Department.

Please let Gordon VK4KAL know if you would like to attend, well before 20th September, so catering can be organised. Dinner (Saturday evening) and breakfast (Sunday morning) are available. No food supplies are available up until Saturday evening, so you will need to bring your own if you are arriving Friday.

A monster auction will be held on Saturday night, if you have any preloved items you wish to donate please bring them along and replace them with something you can bid on at the auction.

If you require any further information, please email the secretary on his new email address: gordon.123@aussiebroadband.com.au or phone 07 4985 4168. Note the "123" in the email address is an L in lower case, not a number 1 (one).

TARC

Townsville Amateur Radio Club is busy as usual. Sunday 27th September sees the King of the Hill Climb Heat Four at Mt Stuart. Mix the day with radios to the sound of squealing tyres and the smell of burning rubber. Operators needed to man start and flying finish for time control and safety communications. Operators signed in to date are VK4ZXX and VK4HSV. Saturday 26th and 27th September is the Woodstock Endurance Ride, get out into the bush only 40 minutes south of Townsville and operate either at ride base or portable checkpoints to provide a safety and competitor audit communications network. Get to try new things in the field day, play DX with minimum noise or even just stargaze at the clear night skies. Operators so far who will be enjoying this are VK4ZZ, VK4UCM and VK4FTVL. If you are available for any of these events please contact Blue VK4FBLU via telephone 4775 4184 at the soonest with your support.

The 2009 North Qld Amateur Radio Convention will be happening in the city of Townsville from Friday 18th to Sunday 20th September. Daytime events will be happening at James Cook University Douglas Campus with night time events centred on one of the better bistros and convention rooms in the city. Visits, lectures and displays are already firming up in the planning. The registration deadline for convention services is Friday 28th August. For an electronic copy of the venue and events details, surf the TARC website http://www.tarc.org.au or email vk4wit@wia.org.au

RADAR

Rockhampton and Districts Amateur Radio Club has delivered the winning prize. Glen Holborow VK4TGH, who recently relocated from Nanago to Gladstone, won the FT-1802 2 metre mobile radio in the RADAR Club raffle.

Thanks to those many people who supported the raffle. The draw was held at the RADAR Club monthly meeting on the 15th July. Thanks also to Rob VK4SEA who donated one kg of fresh prawns for something extra at the meeting. A quick selling of tickets saw the prawns won by Jack VK4JRC.

Until next time Cheers and 73
Chris VK4VKR **ar**



RADAR president Jack VK4JRC (left) handing Glen VK4TGH the winning prize – an FT-1802.

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The July meeting was of particular interest to some of the older amateurs. Rob VK5RG gave us a history of the Post Master General's Department as it changed over the years.

In the beginning the PMG was only concerned with the collection and delivery of letters. Next came telegrams to convey urgent information. With radio came international communication to be disseminated by letter/telegram or newspapers (which were not dealt with by the PMG).

As soon as there were amateur radio operators the PMG became the testing and licensing authority and shortly after that they set up a team of inspectors to make sure any radio equipment was safe (and in the early days that was not always the case, at all!).

Telephones and cable brought more complexity to the PMG doorstep as they linked the suburbs and then the cities with a network of telephone lines across the vast distances of our continent.

For a very long time the PMG was the main and almost the only carrier of messages. This was their main source of revenue to fund the network of telephone lines.

They were not ready to share this resource so amateur radio operators were not allowed, by law, to carry third party messages, or to be paid for passing on messages of any sort.

The PMG became, by default, the controller of all means of communication in Australia so they had to set up a communications branch to handle this side of things, too. The PMG became the largest government department in Australia, so what the PMG wanted or needed was what happened.

But, like Topsy, it became simply too large to be practical. So in 1975 the PMG was divided into three separate entities.

The postal service became Australia Post, the telephone service became Telecom and the communication control section became, first DOTC (Dept of Transport and Communication) and is today the ACMA which we all know.

All these things happened in our lifetime, and in the lifetime of many of our amateur licence experiences.

Alongside all these changes within the PMG, for amateurs, important changes were also happening. From the beginning, and particularly after WW2, the WIA had discussions with the PMG to make conditions easier for amateurs. One of the first major changes was at the end of the 1950s when a new exam was proposed that did not require Morse code; the Limited Licence came into existence.

Sometime in 1978 the Novice licence came along with its less difficult exam and a reduced level of Morse code and the multiple choice questions instead of the essay type questions. More recently the requirement for Morse code was abolished in line with worldwide abolition, and then the Foundation Licence was introduced.

There were many "Oh, yes, I remember" comments from the audience every now and then as Rob told us changes we had not noticed happening, but remembered when we were reminded.

Each month AHARS has lectures that we hope will interest members and visitors.

Please contact the President John VK5EMI or David VK5AMK (in the current callbook). We meet on the third Thursday of each month.

DON'T FORGET THE BUY AND SELL ON 13TH SEPTEMBER.

ar

Radio Amateurs Old Timers Club of SA

The

Annual Luncheon

will be held on

Thursday 22 October 2009

(12 noon for 12:30 lunch).

(Please bring your Seniors Card)

Venue:

Marion Hotel

Marion Road, Mitchell Park

Public transport Bus M44, Stop 24.

RSVP to one of the following committee members before 20 October 2009:

Secretary:

Ray Deane VK5RK Phone: 8271 5401

Assistant Secretary:

Ron Coat VK5RV Phone 8296 6681

Ray Deane, Honorary Secretary

"Hey, Old Timer..."



If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for less than 25 but more than ten years, you are invited to become an Associate Member of the RAOTC.

In either case a $5.00 joining fee plus $8.00 for one year or $15.00 for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194

News From

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

VK7

The International Lighthouse/Lightship Weekend saw at least five stations participate this year: Winston VK7EM at Mersey Bluff Lighthouse (AU0040), Wayne VK7FWAY and Eric VK7FEJE at Table Cape Lighthouse (AU0039), Bill VK7MX, Duncan VK7FLAK and Yvonne VK7FYMX at Low Head Lighthouse (AU0048), Gavin VK7VTX at Pot Boil Channel Lighthouse, Flinders Island (AU0062) and John VK7ZZ at Cape Bruny Lighthouse (AU0005). We hope for some great reports in future issues of AR.

Repeaters/IRLP and EchoLink/APRS News

A new 70 cm repeater is now available in the South covering the Huon Valley. VK7RCH is running on 438.575 MHz RX, 433.575 MHz TX and no tone is required. Thanks to Hayden VK7HAY for this information. In NW VK7 the 6 m repeater VK7RTV is now operational on 52.775 MHz RX and 53.775 MHz TX. We are told that the 2 m repeater at this site should also be available soon on 146.175 MHz RX and 146.775 MHz TX.

IRLP Node 6616 and EchoIRLP Node 467772 have become available again on simplex 147.425 MHz in the Ulverstone area and these will be transferred to the 2 m VK7RTV once it becomes available. The Southern APRS I-Gate is run by Scott VK7HSE and has recently been updated and now runs the Java application - javAPRSServ (ver. 3.14b06). The I-Gate status page is available at: http://www.vk7hse.hobby-site.org:14501

Northern Tasmania Amateur Radio Club

Upon reflection, Jason VK7ZJA has come up with an analogy of electrons and Northern Tasmanian amateur radio operators as their recent activity levels appear both proportional to ambient temperature....HIHI. We welcome Al VK7AN back from overseas where he has been spreading the good word about VK7 amateur radio. Bill VK7MX has also managed to get hold of a good quantity of 20 pF mica compression trimcaps which are suitable for the traps of a HF squid pole multi-band vertical and other antenna projects, so contact Bill if you need any of these.

Cradle Coast Amateur Radio Club (CCARC)

The July CCARC meeting saw Bill VK7MX give a presentation about the squid pole antenna which was well received by all attending. The CCARC is now able to offer full assessments to anyone interested. Give assessor Keith Winkler VK7KW a call on phone: 64282185 or email: winklerkw@hotmail.com

North West Tasmanian Amateur TeleVision Group

We welcome Mark Grewar VK7FZZZ to the airwaves. He successfully completed his Foundation Licence assessment recently. NWATVG is currently planning for the October JOTA/JOTI weekend. If you are interested or have ideas, please contact Tony VK7ZX on email: atvgroup@vk7ax.id.au

Radio and Electronics Association of Southern Tasmania

Welcome again to the bands to James Cooper who now has his callsign which is VK7FJLC. A big thank you to Peter VK7FTAZ for doing the Channel 15 UHF CB rebroadcast in Hobart for many years. Peter and Fiona have moved to Queenstown on the West Coast. REAST's August presentation was a great night of big screen presentations about the International Space Station and the ARISS program. The highlight was the personal tour of the ISS with astronaut Mike and cosmonaut Gennady which provided a fascinating insight into life on the ISS. Thanks to Tony VK5ZAI for these presentations. Members from REAST enjoyed presenting the WIA National News on the 19th July 2009 for a second time. A big thank you to VK7OO, VK7MJ, VK7FEET, VK7FPAH, VK7TL, VK7ZGK, VK7NML and VK7FB for a very professional presentation. Also thanks to Barry VK7TBM and Tom VK7FTWS who allowed us to use the quiet Coast Radio Hobart studio to do the recording. **ar**

OTY

Keep your books

Back in the early 1950s I wanted to become an amateur radio operator and I had the privilege to meet an amateur radio operator who was a fireman, and was stationed at the Port Adelaide fire station in South Australia.

A few weeks ago I returned to Adelaide for a short vacation and I passed the same building, and I had a flashback to the early 1950s. I never forgot that meeting.

I have moved around a lot, in and out of many countries since 1960 and in doing so I had to reduce my excess baggage, so I had to part with a lot of good equipment and many good technical books, which I regretted.

Well, to cut a long story short, I attended the Townsville Amateur Radio Club's Christmas Party auction, where I purchased three bags of old books. After returning to my QTH at Cardwell I decided to check what I had bought, and to my pleasure many of these books were almost identical to what I was forced to get rid of all those years ago.

What has this got to do with the fireman I had met many years before?

Well, the first book I opened, on the inside cover was his name and QTH Port Adelaide fire station. What a thrill. It looked like we bought the same books.

For your information, one book is dated 1894. These books may be old technology, but they helped me get my callsign, and they are worth having in the library again.

I give thanks to the fireman and VK5JW (SK) and VK5HW (SK) for giving me the chance to become an amateur radio operator.

The moral of the story is "keep your books".

Brad Booth VK4CDL/VK2BJB. **ar**

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
vk7rh@wia.org.au

Spring is here and I am certainly looking forward to warmer weather after the winter chills aggravated my arthritic knees. Earlier today, I was calmly eating my breakfast, when the doorbell rang. There were tradesmen from an insulation company who were contracted by this retirement facility to upgrade my unit's insulation.

I have not really done much listening around of late. I have been pre-occupied with other pressing family matters. However I did observe that the Greek language station on the NSW Central coast suddenly re-appeared in the last week of July.

It is within the 120-metre tropical allocation and is on 2368.5. It is extremely odd because I was under the impression that stations broadcasting within this allocation are supposed to be located between the Tropics of Cancer and Capricorn.

I hardly think that the NSW central coast qualifies as being tropical! I also query the rationale of transmitting here as there are few commercial receivers still around with the 120-metre band. I speculate that the station wanted to get away from the other Greek language outlets on the existing AM band, mostly between 1602 and 1701 kHz. Anyway the sender has already been logged as far away as California and Finland. The operators claimed to be only running 50 watts at the time and will be aiming for a kilowatt.

I note that there is a clandestine station heard on 6701 kHz at around 0307 daily signing on with an Islamic Call to Prayer. This is within the aeronautical allocation yet the transmission does not appear to be related to that activity. Speculation is that it may be operated by the NATO coalition forces within Afghanistan, similar to past psychological warfare activities.

Have you heard the Saturday morning AM Net on approximately 7125 kHz? It kicks off around 2230 and brings back a lot of memories for me, when I first started off in the early seventies. Remember VK3BCX from Benalla? He had a superb signal but sadly SSB won out and he was often alone in defending AM. I also recollect that there used to be a number of excellent AM signals on 160 metres. I wonder what became of them.

Well that is all for now. Do not forget you can email me your news and comments to vk7rh@wia.org.au

ar

Over to You

A Real Amateur: or '*Necessity is the Doctor of Communications Invention*'

....and a call for WIA consideration

From Rex Newsome VK4LR

I first met Bob Segalman DSc about 10 years ago, on his first visit to Australia.

As Bob was born with fairly severe cerebral palsy he was in a motorised wheelchair and spoke with an electronic voice-enhancement device. Because I was involved in disability matters at the time, being the chairman of several disability organisations, I was singled out to be on a committee to help establish the Speech-to-Speech (STS) system in Australia.

What is Speech-to-Speech? Well, since many people with speech impairments find using a phone frustrating, because the person at the other end cannot understand them and will therefore usually hang up rather than persevere, Bob devised the STS system.

It is a service whereby anyone with impaired speech can ring a special telephone number from anywhere in the country and talk to someone on the telephone through a trained operator.

The operator listens carefully and relays whatever the user is saying to the person at the other end. The user hears the respondent directly (an example of STS can be seen on Facebook by typing in 'Bob Segalman').

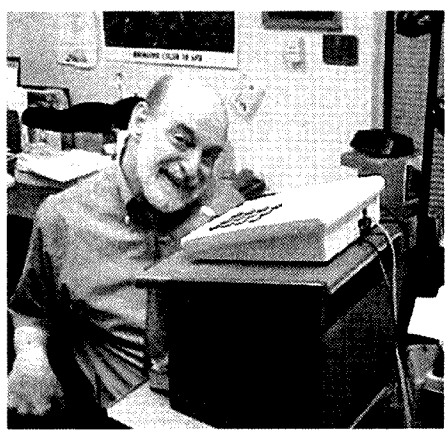
The STS system has been highly successful in the US and is, largely through Bob's mammoth effort, now available in many countries throughout the world, including Australia.

When we met we quickly discovered that, besides both having cerebral palsy (mine is fairly mild however), we were both radio amateurs, Bob being W6OSO.

We have kept in touch over the years and Bob is still zooming around the world in his wheelchair to convince yet more countries to install STS.

I have penned this to make readers aware of STS so they can pass on the message to whomever they know who might find it useful. I also want to suggest that the WIA consider a way of implementing a specialised STS service for older amateurs who are now less than R5 on a microphone. Perhaps such service could be offered through a repeater and appropriately trained ham volunteers?

ar



Dr. Bob Segalman is a Research Analyst with the California Department of Rehabilitation and the National Founder of Speech-to-Speech Consumer/Disability Advisory Committee. He holds both a MS and an earned Ph.D. in Social Welfare/ Sociology from Florida State University and the University of Wisconsin, respectively.

Steam radio goes mobile

Scouts National Radio Camp at Gilwell Scout Park, April 14-18, 2009

Arthur Greaves VK3FBEE
Scout Radio and Electronics Service Unit

Scouts, adult and youth alike, arrived in Melbourne from far and wide. In the camp, near Gembrook in the foothills of the Dandenongs, were representatives from suburban Melbourne, rural Victoria, South Australia, West Australia, and New South Wales, twenty eight in total.

The 'Staff' moved in on Tuesday afternoon from 1300, meeting, greeting, and sharing cheer, coffee, stories and, after lunch, getting down to the business of setting up the camp.



Members of the 'National Radio Camp' on 'Puffing Billy', although not quite mobile (yet!). Scout pictures by Robert Broomhead VK3DN



Two young NRC members having lots of fun operating 'Puffing Billy' mobile.

The 'all amateur radio operator' Leader Group, of sixteen adults and two Venturers, were allocated tasks and schedules.

Many spent the afternoon planning, setting up the training room and various other site activities. After the evening meal, time was spent in Cleve Cole Hut, the radio shack.

Day two, Wednesday: the NRC participants arrived and were processed through the meet, greet and room allocation session and the Camp officially opened.

Part one of the training course covered 'what is amateur radio, the nature of amateur radio, licence conditions, call signs, operating procedures, technical basics and band plan'. The day was broken up by fox hunting and a visit to the radio shack; in the evening games outside and a guest speaker with a talk on contesting, QSL cards and propagation prediction software programs was enjoyed by all.

Day three, Thursday: Foundation training part two, covering transmitters, receivers, antennas, transmission lines and propagation were all covered with activities involving antenna building and erecting, radio operating and, in the evening, a movie and a visit to the ESTA, 000 (triple zero) Emergency Communications Centre.

Day four, Friday: Foundation training part three. Subjects for the day were interference, repeaters, CTCSS, IRLP, DTMF and safety. Theory and practical assessments were next with lunch in between. The remainder of the day was used to finish off building the two metre J pole antenna made of TV ribbon, the 'dirty' balun, made of PVC tube and coax cable, or any of the other projects being built.

An after dinner talk by a Wireless Institute of Australia representative gave all an insight to its activities, and a second session on D-STAR was also of interest.

Continued foot of page 42

Contests

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Contest Calendar for September — October 2009

September	5/6	All Asia Contest	SSB
	12/13	Worked All Europe Contest	SSB
	12	**Westlakes Cup (Westlakes ARC)**	SSB
	19/20	Scandinavian Activity Contest	CW
	26/27	Scandinavian Activity Contest	SSB
	26/27	CQWW RTTY DX Contest	RTTY
October	3/4	**Oceania DX Contest**	SSB
	9	10/10 International Day Sprint	CW/Phone
	10/11	**Oceania DX Contest**	CW
		Moon Contest	CW/SSB/Digital
	17/18	Worked All Germany	CW/SSB
	17/18	JARTS Worldwide RTTY	RTTY
	17/18	50 MHz Sprint	All
	18	Asia Pacific Sprint	CW
	24/25	CQWW DX Contest	SSB
	24/25	ARRL International EME Competition	All

With the month of September, I cannot help thinking contest, contest, contest. The Remembrance Day contest weekend was a definite warm up for some of the fun to be had in the world of contesting at this time of year.

A quick look at the contest calendar reveals a major event every weekend depending on your modes of choice and the DX reaching capability of your station. If you only remember one thing from this month's column, it is this: IT IS TIME TO PREPARE FOR THE 2009 OCEANIA DX CONTEST.

Oceania DX Contest – 2008 Results from 783 Logs!

The Oceania DX Contest Committee, namely ZL1AZE, VK3TZ, ZL3GA, VK7GN, VK2FHN, VK6DXI and ZL2BSJ/PE7T, have released the results of the 2008 Oceania CW and Phone contests. Participation in the 2008 contest was the highest recorded to date, with 783 logs submitted. What fantastic news considering that conditions on the higher bands were generally poor due to the lack of solar activity.

Of particular note was the excellent turnout from VK stations in the Phone section. As well as the more common VK, ZL, YB and KH6 stations, there were a number of stations active from some of the rarer Oceania entities, including 9M6, DU, KH2, T88, V8 and VK9 Norfolk Island.

The Oceania DX Contest Committee congratulates all the winners and thanks all who participated, even if only to make one or two QSOs. Of special note was the performance of Akira Hujimoto JR1VAY who operated the AH2J station to take top position in Oceania for the Phone Single Operator All Band category.

This meant that John Loftus VK4EMM was unable to repeat his usual feat of leading Oceania in both the Phone and CW Single Operator All Band categories but he still led Oceania in the CW Single Operator All Band category by a considerable margin.

Also of note was the performance of JA7NVF who has again produced the highest score outside Oceania in the Phone section, and RD3A who produced the highest score outside Oceania in the CW section.

In order for a club to be eligible for the Australia Club plaque, there must be at least five logs from member stations, with each log containing a minimum of 50 valid QSOs. Only two clubs met this requirement in 2008: the Eastern and Mountain District Radio Club with six logs and the Northern Corridor Radio Group with five logs.

The rules state that there must be three or more clubs competing in order for the plaque to be awarded but the sponsor (VK Contest Club) waived this requirement for the 2008 contest, in the interest of promoting the plaque and encouraging 2009 contest participation.

The ongoing sponsorship of plaques is critical to the future growth and success of this contest. The contest committee would welcome new sponsorship offers and invites anyone who is interested in

becoming a sponsor to contact them at info@oceaniadxcontest.com

The cost of sponsoring a plaque is approximately AUD $50.00 per annum, to cover the expenses. You could always be sneaky: my wife is still not aware that I am sponsoring a SSB category, if she finds out I will just say it is my duty as AR Contest column editor.

The Oceania DX Contest Committee report the overall number of QSOs logged in 2008 was 14% greater than that recorded in 2007, but was still 13% below the record of 39,863 QSOs logged in 2006. Competitors indicated propagation to be generally only poor to average; so much of the increase between 2007 and 2008 would appear to be attributable to increased participation.

Most of the activity was on the 20 m and lower bands, with 40 m making the biggest contribution to final scores. Conditions on 80 m were significantly better than previous years, with the percentage of QSOs on this band increasing to 10% in the phone section and 14% in the CW section. Of particular note was the activity of VK9CNC who logged 512 CW QSOs on 80 m. The phone section seemed to enjoy better conditions on 15 m and 10 m than the CW section, but the overall activity on these bands was still very low compared to earlier years when the solar activity was greater.

The average levels of 10 cm solar flux radiation for the Oceania DX Contest weekends of 67 (Phone) and 70 (CW) were similar to those in 2007 and represent the lowest values recorded since 2001. Unfortunately as I compile this month's column, the levels still remain very similar, so when planning a strategy for this year, we can pretty much go by what happened in 2008 as a guide for 2009.

For the 2008 contest 783 logs were processed, a 21% increase compared to 2007, and a 9% increase compared with the previous record of 708 logs in 2006. Of particular note was the fantastic turnout from VK stations in the phone section – a total of 67 VK phone logs was submitted in 2008 compared to 41 in 2007 and 53 in 2006.

There was also a large turnout from European Russia stations in the CW section, with a total of 88 logs being submitted from this country area. The increased participation was most encouraging to the contest committee and quite remarkable considering that HF conditions for the 2008 contest were only poor to average.

The increase can be attributed to a combination of factors including the delivery of the outstanding plaques to winners from previous years and increased promotion of the contest, especially in Australia.

Actual activity was much greater than indicated by the number of logs submitted. For example, there were at least 1,050 stations in the Phone section that made a minimum of five QSOs, but only 376 logs were submitted.

Similarly, in the CW section, there were at least 830 stations that made a minimum of five QSOs, but only 405 logs were submitted. In the Phone section there were at least 134 VK and 39 ZL stations that made 10 or more QSOs, but only 66 VK and 21 ZL stations actually submitted logs. Similarly, in the CW section there were at least 38 VK and 22 ZL stations that made 10 or more QSOs, but only 24 VK and 12 ZL stations actually submitted logs.

The contest committee report that the focus needs to shift to increasing the participation rates in some other Oceania countries. Participation from Asia and Europe continued to be strong, with a notable increase in the number of logs from Europe in the CW section, mainly due to increased activity from stations in the European Russia and Ukraine.

The participation rates from North America, South America and Africa are still lagging well behind the other continents. It is hoped that participation from North America will eventually be spurred by the plaques that were recently introduced for the leading North America entries in the Phone and CW Single-Op All Band categories.

In line with the trends for other major international contests, the contest committee is also considering publishing the logs from future Oceania DX Contests on the web. The rules for the 2009 contest will be modified to provide for this possibility. The Committee would be interested to receive any comments that existing or potential entrants might like to make concerning the desirability of publishing the logs on the web.

Extensive results are available at www.oceaniadxcontest.com/results.htm but here is a brief run down of top 3 placegetters in Oceania and in VK:

Steam Radio continued from page 40

demonstrations of field antenna systems and how to dismantle and stow gear safely without damage was carried out. Personal kits were packed and loaded into vehicles ready for transport to the pick-up point.

After lunch all were taken to 'Puffing Billy' for a trip to Belgrave. On arrival at Gembrook station, the camp group was allocated a carriage which was quickly turned into a radio shack on tracks, HF at one end, VHF/UHF at the other, and much to the interest of all the other passengers and bystanders Our two Venturers, Tim VK3FTIM and Cal VK3FCWA, played a big part in the set up of the train mobile amateur station.

Once under way the first CQ call started a rush which continued for two hours, from Gembrook all the way to Belgrave. HF contacts were made throughout Australia, New Zealand and into several other countries. VHF contacts through the many accessible repeaters in the two hour trip were also high. So many contacts, so many QSL responses to send, so many surprised looks, so much fun.

Is the **'National Radio Camp'** going to happen again? Sure will! Keep watching the web site of the Scout Radio & Electronics Service Unit Vic at www.sresu.asn.au

Information will also be on the Scout web site and in the Scout Magazine, as well as the WIA web site and its magazine, *Amateur Radio*.

Who do we thank, where do we start! To Jenny VK3MDR and Philip VK3JNI, without whom there would have been NO camp. Thank you to Bob VK6POP, Paul VK5PH, Kent VK3TER, Greg VK3FUNK, Ben VK3HBN, John VK3AEK, Allan VK3FSFA, Peter VK3ZPF, Peter VK3AJ, Peter VK3TQ, Robert VK3DN, Bryan VK3YNG, Dean VK3NDJ, Adam, and all the others who played a part in either the running, or supporting, of the camp.

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Oceania Phone

1st Phone SO ALL	AH2J	1931616 points
2nd Phone SO ALL	VK4FW	1680525 points
3rd Phone SO ALL	VK6IR	1467978 points
1st Phone SO 160 m	ZL4RMF	5040 points
1st Phone SO 80 m	ZM2HAM	29260 points
2nd Phone SO 80 m	KH6QJ	25160 points
3rd Phone SO 80 m	ZL2CCO	1440 points
1st Phone SO 40 m	ZL2CC	14720 points
2nd Phone SO 40 m	ZL1KMN	8580 points
3rd Phone SO 40 m	VK3YXC	3850 points
1st Phone SO 20 m	V8AQM	47520 points
2nd Phone SO 20 m	9M6YBG	20618 points
3rd Phone SO 20 m	VK4KKD	16906 points
1st Phone SO 15 m	YC9MDX	234256 points
2nd Phone SO 15 m	4F1AL	79464points
3rd Phone SO 15 m	T88OM	61920 points
1st Phone MS	VK6ANC	793191 points
2nd Phone MS	ZM1A	511525 points
3rd Phone MS	VK7WCN	16470 points
1st Phone MM	VK4KW	1430920 points
2nd Phone MM	VK3FRC	138600 points
3rd Phone MM	ZL1VK	64038 points
1st Phone SWL	VK3FTJH	34432 points

Australia Phone

1st Phone SO ALL	VK4FW	1680525 points
2nd Phone SO ALL	VK6IR	1467978 points
3rd Phone SO ALL	VK7ZE	1126460 points
1st Phone SO 40 m	VK3YXC	3850 points
2nd Phone SO 40 m	VK3PC	3360 points
3rd Phone SO 40 m	VK6ZLA	2380 points
1st Phone SO 20 m	VK4KKD	16906 points
1st Phone SO 15 m	VK4FJ	12928 points
1st Phone MS	VK6ANC	793191 points
2nd Phone MS	VK7WCN	16470 points
1st Phone MM	VK4KW	1430920 points
2nd Phone MM	VK3FRC	138600 points
3rd Phone MM	VK3SAT	60792 points
1st Phone SWL	VK3FTJH	34432 points

Oceania CW

1st CW SO ALL	VK4EMM	3559448 points
2nd CW SO ALL	VK7GN	1931655 points
3rd CW SO ALL	ZM2B	1708772 points
1st CW SO 80 m	VK9CNC	1078470 points
2nd CW SO 80 m	ZL2AGY	152280 points
3rd CW SO 80 m	VK4FW	69930 points
1st CW SO 40 m	VK2BJ	305760 points
2nd CW SO 40 m	ZL3TE	249375 points
3rd CW SO 40 m	VK8AV	79750 points
1st CW SO 20 m	9M6YBG	46612 points
2nd CW SO 20 m	ZL2RVW	5712 points
3rd CW SO 20 m	VK3QI	2668 points
1st CW SO 15 m	YD1BJX	27336 points
2nd CW SO 15 m	YD1HUH	15756 points
1st CW SO 10 m	VK4YN	4851 points
1st CW MS	ZM1A	2569987 points
2nd CW MS	ZL4A	1593357 points
1st CW MM	VK3FRC	48800 points

Australia CW

1st CW SO ALL	VK4EMM	3559448 points
2nd CW SO ALL	VK7GN	1931655 points
3rd CW SO ALL	VK2IM	1102790 points
1st CW SO 80 m	VK4FW	69930 points
1st CW SO 40 m	VK2BJ	305760 points
2nd CW SO 40 m	VK8AV	79750 points
3rd CW SO 40 m	VK4KW	57855 points
1st CW SO 20 m	VK3QI	2668 points
1st CW SO 10 m	VK4YN	4851 points
1st CW MM	VK2FRC	48800 points

Oceania DX Contest – 2009 Rules

Well after all that, I'm ready to dive into the 2009 event, and the great news is that it is coming just around the corner. So dust off those tribanders and start looking in the shed for radial wire for that faithful old 40 m vertical. Spring is sprung and wire needs to be hung – its Oceania DX contest time! The general rules are provided below however those people participating should visit www.oceaniadxcontest.com for all the information.

SPECIAL NOTES

All email logs are processed by an email robot. The robot sends an automated email acknowledgement indicating either acceptance or rejection of the log. If you do not receive this acknowledgment, or are encountering difficulty in having the log accepted, then please contact info@oceaniadxcontest.com

Electronic logs are to be in Cabrillo format which is now generated by all popular contest logging software programs. Alternatively entrants can use the forms at http://www.b4h.net/cabforms/ to manually create and submit a Cabrillo file.

Portable prefixes must be inserted in front of the home callsign, e.g., W1XXX operating in ZL1 would sign as ZL1/W1XXX. If the station worked does not provide a serial number, then log the received number as 001. See rule 8. This new provision allows credit for contacts with stations that are not in the Oceania DX Contest. A reminder that Single-Op Single Band logs are to record ALL contacts made by the station - both on the band chosen for the entry and on any other bands. Stations must log a minimum of 10 contacts to be eligible for an award.

CONTEST PERIODS:

Phone Contest: 0800 UTC Saturday 3 October to 0800 UTC Sunday 4 October 2009. CW Contest: 0800 UTC Saturday 10 October to 0800 UTC Sunday 11 October 2009.

AIM:

To promote HF contacts with stations in the Oceania region

OBJECT:

Oceania transmitting stations to contact as many stations as possible both inside and outside the Oceania region.

Non-Oceania transmitting stations to contact as many stations as possible inside the Oceania region. There is no penalty for working non-Oceania stations but contacts between non-Oceania stations will score no points or multiplier credits.

Oceania receiving (SWL) stations to copy as many contest stations as possible both inside and outside the Oceania region.

Non-Oceania receiving (SWL) stations to copy as many contest stations as possible inside the Oceania region.

BANDS:

160 m – 10 m (no WARC bands).

TERMS OF COMPETITION FOR ALL CATEGORIES

A different callsign must be used for each entry. Entrants must not exceed 1500 watts total output power, or the maximum permitted output power in their country, whichever is less, on any band. QSO alerting assistance (e.g. packet spots) is allowed but self-spotting, asking other stations to spot you, or any other form of soliciting QSOs is not allowed. All of an entrant's transmitters and receivers must be located within a 500-metre diameter circle or within the property limits of the station licensee, whichever is greater. All antennas must be physically connected by wires to the transmitters and receivers used by the entrant. Remote operation is permitted. The entry location of a remote station is determined by the physical location of the transmitters, receivers, and antennas. A remote station must obey all station and category limitations.

ENTRY CATEGORIES

SINGLE-OP: Single Operator, All Band or Single Band. One person performs all of the operating and logging functions. Only one transmitted signal is permitted at any time.

MULTI-SINGLE: Multiple Operator, Single Transmitter, All Band. Only one transmitter and one band permitted during a 10-minute period. Exception: One other band may be used during a 10 minute period if the station worked is a new multiplier. It is permissible to use a second transmitter for working the multiplier stations on an alternate band. Ten-minute periods begin with the first

logged QSO on a band. The log must indicate which transmitter made each QSO in column 81 of the Cabrillo QSO template - use "0" for the run station and "1" for the multiplier station.

MULTI-MULTI: Multiple Operator, Multiple Transmitters, All Band. No limit to transmitters, but only one transmitted signal (and running station) allowed per band at any time. Use a separate serial number sequence for each band.

SWL: Short Wave Listener (Receive Only), All Band.

EXCHANGE: RS(T) report plus a three or four digit number starting at 001 (or 0001) and incrementing by one for each contact. MULTI-MULTI entries must use a separate serial number for each band. If the station worked does not send a serial number, then the received number is to be logged as 001.

MULTIPLIER: The multiplier is the number of different prefixes worked. Note that the same prefix may be counted once on each band for multiplier credit. A prefix is the letter/numeral combination that forms the first part of the amateur call - the same as the CQ WPX contest definition. Examples of valid prefixes are N8, W8, WD8, HG1, HG19, KC2, OE2, OE25, etc.

Any difference in the numbering, lettering, or order of the same shall constitute a separate prefix. A station operating from a DXCC country different from that indicated by its callsign is required to sign portable. The portable prefix must be an authorized prefix of the country/call area of operation.

In cases of portable operation, the portable designator will then become the prefix. Example: N8BJQ operating from Wake Island would sign KH9/N8BJQ or NH9/N8BJQ. KH6XXX operating from Ohio must use an authorized prefix for the U.S. 8th district (W8, K8, etc.).

Portable designators without numbers will be assigned a zero (Ø) after the second letter of the portable designator to form the prefix. Example: PA/N8BJQ would become PAØ. All calls without numbers will be assigned a zero (Ø) after the first two letters to form the prefix. Example: XEFTJW would count as XEØ. Maritime mobile, mobile, /A, /E, /J, /P, or interim license class identifiers do not count as prefixes.

Special event, commemorative, and other unique prefix stations are encouraged to participate. Prefixes must be assigned by the licensing authority of the country of operation.

CONTACT POINTS: Each QSO is credited twenty points on 160 m; ten points on 80 m; five points on 40 m; one point on 20 m; two points on 15 m; and three points on 10 m. Note that the same station may be counted only once on each band for contact points.

THE FINAL SCORE is the sum of the Contact Points multiplied by the Multiplier (the total number of prefixes worked on all bands, noting that the same prefix can be counted once on each band).

AWARDS

To be eligible for an award, stations must log a minimum of 10 contacts. Certificates will be awarded to the top scoring station in each category listed for each IARU WAC continent and each country.

A special participation certificate will be awarded to every station that makes at least 100 QSOs in either the PHONE or CW sections of the contest. The following trophies and plaques will also be awarded:

Top entrant from Oceania in Phone Single Operator All Band category: Ron Wills ZL2TT Memorial Trophy sponsored by ZL2GI, ZL2AL, Wellington Amateur Radio Club and NZART.

Top entrant from VK in CW Single Operator All Band category: Frank Hine VK2QL Memorial Trophy sponsored by the WIA.

Top entrant from VK in Phone Single Operator All Band category: plaque sponsored by Tony Hambling VK3VTH.

Top local club from Australia with the greatest number of member stations participating in the Oceania DX Contest: plaque sponsored by VK Contest Club.

Top Entrant from Asia in Phone Single Operator All Band category: plaque sponsored by Craig Edwards VK8PDX.

Top Entrant from North America in CW Single Operator All Band category: plaque sponsored by the Oceania Amateur Radio DX Group Inc.

Top Entrant from North America in Phone Single Operator All Band category: plaque sponsored by N6RO.

Top Entrant from Europe in CW Single Operator categories: Frank Vander Drift VK3COF Memorial plaque sponsored by Mirek Rozbicki VK6DXI.

Top Entrant from Europe in Phone Single Operator All Band category: plaque sponsored by the Oceania Amateur Radio DX Group Inc.

Further information including log requirements and entry submissions should be obtained from the contest website. So please visit www.oceaniadxcontest.com, email info@oceaniadxcontest.com or write to Oceania DX Contest Committee, c/o Wellington Amateur Radio Club Inc., PO Box 6464, Wellington 6030, New Zealand.

NZART Memorial Contest

With the recent VK Shires contest, I noticed a handful of ZLs taking the time to be on 80 so I thought I would repay the favour by entering the NZART Memorial contest. The event occurred on 80 m in six one hour blocks from 0800 to 1100 UTC on Saturday and Sunday evenings.

I figured the VK8 prefix would be quite a rare multiplier, so I was looking forward to a bit of fun. With my recent move to Alice Springs, I had just completed putting up the ground mounted multiband vertical and forty 20 m long radials were spread all over the backyard.

A temporary full size 80 m dipole was also thrown in the air. It was only temporary because half of it was in a public space and had to be done under the cover of darkness.

It was tricky at the 0800 UTC start with Alice Springs still being in full sunlight, but by 0900 UTC I could start hearing the action. Apart from ZL4U (aka ZL3SV), all ZL stations were right down in my noise floor and I really had to strain my ears to make any trans-Tasman contacts. While running on a frequency, every now and then Catherine VK4VCH would scare the life out of me when she responded to my CQ with her monster signal.

Once I composed myself, it was back to struggling with the threshold level voices. All in all a fun experience, despite the difficulties of this inland location I contacted 16 ZL stations. The goal was to give out the much needed VK8 multiplier so at least there were 16 happy chappies.

The Westlakes Cup

This is a quick contest run by the Westlakes Amateur Radio Club that is surely worth a look. Even those hams without much spare time can enter as it only goes for an hour on a Saturday night.

Date: Saturday 19th September 2009.

Time: 1030 to 1130 UTC

Band: 3535 to 3620 kHz

Mode: SSB, DSB, AM

Maximum power limit is 100 W for standard and advanced and 10 W for foundation licence holders. All Stations shall call 'CQ Westlakes Cup'. Exchange shall be the operator's name and a signal report.

After the contact is made and reports exchanged the station that had called 'CQ' must QSY at least 5 kHz from the frequency before calling again. There will be no 'sitting' on a frequency and working a 'pile up'.

You must QSY after each contact is made. Only VK or Special Prefix (AX, VI) Australian stations may be worked. The contest may expand to ZL, P2 and other South Pacific neighbours in the future.

Points A:

There will be two BONUS stations operating in the contest. The BONUS stations are the stations that hold the Cup from the previous year's contest. The stations that are the BONUS stations will be worth 1 point for the QSO plus 3 bonus points and may be worked twice in the contest, once every half hour, if you can find the mischievous little devils. This year the BONUS stations will be VK7VH/BONUS and VK2FRKO/BONUS.

Points B:

Amateur radio clubs and WIA affiliated stations are encouraged to take part. Every amateur radio club that takes part in the contest shall be worth 1 for the QSO plus 1 bonus point.

Every amateur radio club taking part shall sign with the call eg. VK2--/CLUB. WIA station calls such as VK2WI, VK4WIT, VK2BWI etc. shall qualify under the same scoring system as Amateur Radio Clubs and must identify themselves with a /CLUB after the call sign eg. VK3W--/CLUB.

Amateur Radio Club stations and WIA Club Stations may be worked only once in the Contest hour.

Points C:

Every station that does not fall into the BONUS categories listed above shall be worth 1 per QSO and shall be worked only once during the Contest.

Points D:

SWLs shall be able to claim the same points as per transmitting stations. For example if an SWL hears a BONUS station they may claim 1 point plus 3 bonus points. If they hear a radio club or WIA club station they can claim 1 for the QSO plus 1 bonus point. They must record the callsign and information of both stations in the QSO.

Awards:

Inscribed cups shall be awarded to the stations with the highest points attained. There will be one cup awarded in the Advanced and Standard Licence Category (100 Watts) and one in the Foundation Licence Category (10 Watts).

Certificates shall be awarded to the first, second and third place getters in each section, additional certificates may be issued to those who, in the opinion of the contest manager of Westlakes Amateur Radio Club have contributed, maintained or attained prominence in any particular area of expertise or excellence in the contest.

At 1015 UTC on 3585 kHz +/- QRM, the BONUS station shall make an announcement outlining the basic rules of the Contest.

At two minutes prior to the contest, the BONUS station shall make an announcement to the affect that the contest shall begin in two minutes.

After the contest, the BONUS station shall call in all stations again on 3585 kHz +/- QRM that wish to declare their scores for the contest.

The object of this 'check in' after the contest is that stations may get an 'idea' of the contest results on the same night as the contest takes place although confirmed places will only be made known after the contest manager has received and checked the logs.

VK contest logger supports this contest and is available at http://web.aanet.com.au/~mnds/ For details on how to submit your log, please visit www.westlakesarc.org.au/contest.htm

Field Day Web Site

http://www.wia.org.au/members/contests/vhfuhf/

This site includes the rules for the next Field Day, rules and results of all past VHF-UHF Field Days, cover sheets and scoring tables, plus other information.

Spring VHF-UHF Field Day 2009

Contest manager John Martin VK3KM advises that ballots were taken on the VK-VHF email reflector and the VK Logger, to find the most popular date for the next Spring Field Day. The clear winner was the last weekend in November – Saturday and Sunday 28 and 29 November 2009. The rules will be published in the October issue of *AR*.

Scandinavian Activity Contest

Just in case conditions improve, then it is worth being in front of the radio for the Scandinavian Activity Contest. Now you never know, the band may open up. After all I did hear a couple of OH0 stations from Aland Island on 40 m and 20 m SSB during the IOTA contest – working them was a different story, grumble grumble.....

Apart from the more common Scandinavian countries like Norway, Finland, Denmark and Sweden, it is an opportunity to hunt the rarer entities like Svalbard Island, Jan Mayen Island, Aland Island, Market Reef, Greenland, Faeroe Island, and Iceland.

The CW section is from 1200 UTC September 19 to 1200 UTC September 20. The SSB section is on the following week from 1200 UTC September 26 to 1200 UTC September 27. Rules for non-Scandinavian countries are available at www.sk3bg.se/contest/sacnsc.htm

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Why do the work and not get the points?

get your

ALARA Log

and

RD Log

in

NOW

Winter VHF/UHF Field Day 2009 Results

Contest manager: John Martin VK3KM

This year's Winter Field Day saw less than usual activity – except in the home station section. Not a surprise, because the weather was cold, and so was the propagation.

The winner of Section A was Doug Friend VK4OE, and in Section B, Tim Dixon VK5ZT took the honours again. In the multi-operator sections, top scores went to the Elizabeth club VK5LZ, and to the VK3XPD team. In the home station section, the winner was Andrew Martin VK3OE. Congratulations to all, and I hope you will all thaw out soon.

The next event will be the Spring Field Day, to be held on the weekend of November 28 and 29.

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	TOTAL
Section A:	**Single Operator, 24 Hours**										
VK4OE	Doug Friend	QG62, QG63	87	417	530	724	450	-	-	210	2418
VK3DAG	Steven Hamer	QF32	82	498	560	384	-	-	-	-	1524
VK4ALH	Leicester Hibbert	QG63	21	309	255	392	210	-	-	210	1397
VK4CP	Adam Maurer	QG61	48	378	355	328	-	-	-	-	1109
VK4HEC	Ewen Cameron	QG52	48	390	410	-	-	-	-	-	848
VK2FABV	Colin Sibraa	QF36	-	441	225	-	-	-	-	-	666
VK3SI	Glenn Reynolds	QF31	41	228	265	-	-	-	-	-	534
VK2YJS	Julian Sortland	QF56	-	120	105	-	-	-	-	-	225
Section B:	**Single Operator, 8 Hours**										
VK5ZT	Tim Dixon	PF85, PF95, PF96	87	294	460	376	-	-	-	-	1217
VK3HY	Gavin Brain	QF32	74	267	330	488	-	-	-	-	1159
VK5AGZ	Derek Reuther	PF85, 86, 94, 95, 96	33	315	475	-	-	-	-	-	823
VK1DA	Andrew Davis	QF44	34	399	310	-	-	-	-	-	743
VK5AR	Alan Raftery	PF94, PF95	88	258	365	-	-	-	-	-	691
VK4ADC	Doug Hunter	QG61	48	294	225	-	-	-	-	-	567
VK2CU	Justin Lavery	QF59	-	252	105	168	-	-	-	-	525
VK1DSH	Dale Hughes	QF45	-	210	165	-	-	-	-	-	375
VK2JH	John Hams	QF58	-	141	170	-	-	-	-	-	311
Section C:	**Multi Operator, 24 Hours**										
VK5LZ	Elizabeth ARC (1)	PF95	77	324	475	368	-	-	-	-	1244
VK4WIE	CBRS (2)	QF53, QG62, QG63	-	555	395	168	-	-	-	-	1118
Section D:	**Multi Operator, 8 Hours**										
VK3XPD	(3)	QF21	41	345	485	448	320	-	-	210	1849
VK5LZ	Elizabeth ARC (1)	PF95	77	324	475	368	-	-	-	-	1244
VK3AWS	WANSARC (4)	QF22	45	186	175	240	-	-	-	-	646
VK2HZ	BMARC (5)	QF56	-	144	185	-	-	-	-	-	329
Section E:	**Home Station, 24 Hours**										
VK3OE	Andrew Martin	QF22	47	357	370	448	-	-	-	-	1222
VK3WT	Max Chadwick	QF22	-	285	310	528	-	-	-	-	1123
VK3VFO	Nick Kraehe	QF31	49	393	380	176	-	-	-	-	998
VK2XTT	Tim Tuck	QF56	-	438	285	-	-	-	-	-	723
VK5LBJ	Darryl Ross	PF95	43	240	395	-	-	-	-	-	678
VK4VDX	Roland Lang	QG62	-	366	295	-	-	-	-	-	661

(1) Elizabeth Amateur Radio Club: Keith Gooley VK5OQ, P. Roehrs VK5NE, I. Crawford VK5ZD, W. Anthony VK5AHV, S. Mahony VK5AIM, A. Hall VK5AKH.

(2) City of Brisbane Radio Society: R. Meiring VK4DD, J. Morris VK4MJF, R. Croucher VK4CRO

(3) A. Devlin VK3XPD, P. Roberts VK3TPR, M. Coleman VK3KH.

(4) Western and Northern Suburbs ARC: W. Bruce VK3VCL, V. Mong VK3DKM, J. Karr VK3FMPB.

(5) Blue Mountains ARC: Richard Neilsen VK2LET, Mark Bryan VK2FMJB, Tracey Bryan VK2FTBH, Felicity Austen VK2FACW, Andrew Vaughan VK2FACV **ar**

David Smith VK3HZ – vk3hz@wia.org.au

The Magic Band – 6 m DX

Brian Cleland VK5BC

July continued to be quiet with some further winter 'E' openings and Meteor scatter contacts maintaining some interest.

On the 1st July Kerry ZL2TPY reported hearing several beacons including FK8SIX, VK4RGG & VK2RHV whilst VK2HN also reported the FK8SIX beacon. Unfortunately there were not any contacts reported.

The best 'E' opening of the winter occurred on 8th July when the band was open for several hours with several contacts between VK1, 2, 3, 4 & 5. Signals were of good strength with Rob VK1ZQR making several contacts whilst mobile in Canberra. From VK5 the band was open from as far south as Norm VK3DUT in the Gippsland area to John VK4FNQ in Charters Towers and many contacts were completed up and down the eastern coast.

Brian VK4EK at Sapphire in mid north Queensland reported hearing both the FK8SIX and VK3RMH beacons on the 9th July. Brian reported the beacons again on the 10th this time though completing several contacts with VK1, 2, 3 & 5. On the same day Kevin VK4BKP in Mackay also completed several contacts into VK2, 3 & 5.

The 11th July was also a good day for winter 'E's with good contacts completed from VK4 to VK2 & 5. Kerry ZL2TPY worked several VK2s and reported the VK5RBV beacon. Late afternoon the band opened from VK7 to VK6 with Glenn VK7AB working Jack VK6KDX and Glen VK6IQ.

Again on the 12th July the band opened from VK4 to VK2, 3 & 5. This time David VK4ZDP in Innisfail worked several VK1 & 2 stations whilst Andrew VK4KAY in Mackay worked Brian VK5BC.

On the 15th July Brian VK5BC reported hearing the ZL3SIX beacon over a long period of time and Brad VK2QO reported the VK5RBV beacon but there were not any contacts completed.

The band was again lively down the eastern coast on the 17th July with several contacts completed to as far north as John VK4FNQ in Charters Towers and down as far south as Kevin VK3WN in Ballarat.

19th July saw the band open from ZL with contacts being made from VK2, 3, 4 & 7. Peter ZL4LY, Bob ZL3TY and Kerry ZL2TPY completed several contacts from Rockhampton to Hobart. The same day contacts were completed from VK4 to VK2 and 3. Again on the 20th the band opened from ZL to VK, this time Duncan ZL3JT worked Kevin VK3WN, Norm VK3DUT and John VK2BHO.

On the 23rd July the band opened from northern VK4 to VK2, 3 & 5 with Brian VK4EK completing several contacts whilst Brian VK5BC worked Tony VK2BTS in Grafton and Brian VK4DDC. The 24th was similar with Brian VK4EK completing contacts with Rob VK1ZQR and Dave VK1DJA and Brian VK5BC working Rod VK4CRO and Les VK4ALH.

Glenn VK7AB had a good day on the 26th July working several VK4s while Ron VK4DD and Phil VK4FIL worked Kevin VK3WN, Brian VK3BBB and Mike VK3ALZ.

Meanwhile early on many mornings meteor scatter contacts have been completed and Brad VK2QO reports:

July Meteor Scatter on 50.200 MHz

On the mornings of the 6th: John VK4ZJB 5/9. 10th: Brian VK4EK 5/2, John VK4ZJB 5/5. 11th: Scott VK4CZ 5/1.

18th: John VK4ZJB 529. 21st: Glenn VK7AB 5/1. 22nd: Brian VK5BC 5/1. 25th: Scott VK4CZ 559, 5/2 and 5/2 three contacts made over 1.5 hours and Brian VK5BC 5/2. 26th: Scott VK4CZ 519. 28th: Glenn VK7AB 529. 29th: Brian VK4EK 5/1.

30th: Phil VK4FIL 519.

Most mornings VK5RBV and VK4RGG are heard with pings, bursts and burns. On occasions VK7RST, VK7RAE were heard but the best was VK4RTL at 1927 Z on the 31/7/09 Z (1/8/09).

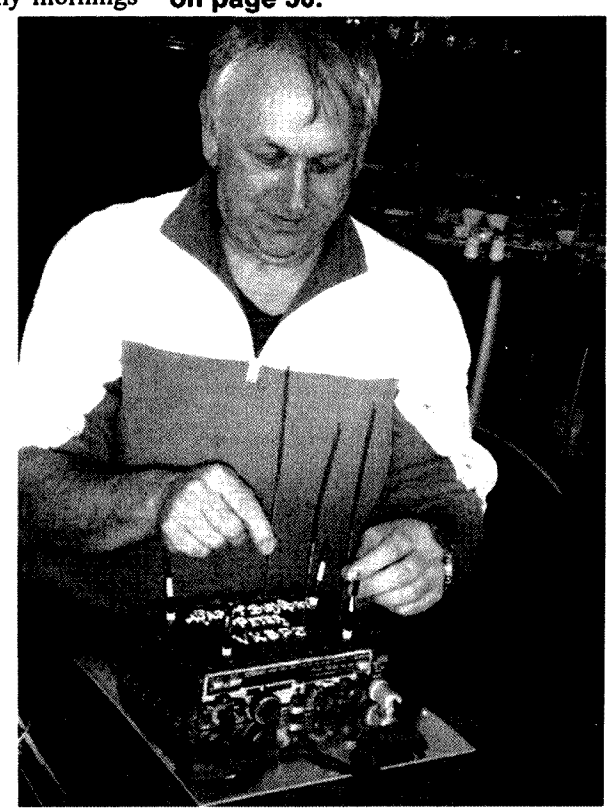
There have been lots of contacts made between VK4-VK3, VK7-VK5 and VK5-VK4. Next month should be better with the Perseids at a rate of 100 hits per hour around the 12th and 13th of August in the northeastern skies.

Peter VK6KXW and Gary VK4ABW regularly report being able to either hear TV carriers in the 49 MHz to 50 MHz area or see them on Spectran or similar programs from the northern hemisphere. Unfortunately no contacts have eventuated and we can only continue to wait for the next sunspot cycle to kick into action.

Peter VK5PJ celebrated his 50th birthday during the month and he is pictured below preparing to cut his cake which looked like a radio he once owned.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com

Balance of VHF/UHF column is on page 50.



No need to worry, it is not Peter's 6 m rig covered in icing but in fact is actually a cake.

AMSAT

David Giles VK5DG

Foundation Licensees and OSCARs

Responding to our Editor's call for articles geared towards the Foundation Licensees we have an article showing how Foundation Licensees CAN use most satellites. Also this month there is more news on the SuitSat-2 mission, four new satellites and some feedback from the 6-monthly satellite review.

Foundation Licensees

Not mentioned in the exam or the syllabus and not even a paragraph in the first edition of the Foundation Licence Manual, but Foundation Licensees can operate most of the satellites.

The Radiocommunications Licence Conditions (Amateur Licence) Determinations (LCD) schedule 3A [1], allow Foundation Licensees to transmit in the 10 m, 2 m and 70 cm bands using CW, SSB and FM. This gives them full access to transponders on AO-7, FO-29, SO-50, and VO-52 and also use of parts of AO-51 and some operations on the ISS.

Foundation Licensees can operate most of the satellites

Foundation Licensees cannot transmit to the digital satellites (e.g. GO-32, NO-44, and the digital sides of AO-51 and the ISS). Also 23 cm uplinks (such as AO-51 and CO-65) cannot be used nor the 13 cm mode-S transmitter on AO-51. This would contravene section 8A(3) of the LCD as the satellite would be re-broadcasting the operator's signal on a frequency not permitted for the operator. (See AMSAT column in the May 2009 issue of AR for what you are missing out on there).

More good news: the 10 watt transmitter power limitation is no problem. For Low Earth Orbit satellite operation, 10 watts (or less) into a small Yagi will put a good signal through any of the above satellites. As an example, SO-50 has a very sensitive receiver and has been used with transmit power levels down to 50 mW. Satellites have a very limited power supply and can easily be overloaded by strong uplink signals. Operators who transmit with too much power are known as alligators (big mouth, small ears) and it is poor operating practice.

The 10 watt limit may stop a Foundation Licensee from doing any harm to the satellite.

One exception where the 10 watt limit may be a struggle is using the repeater on board the International Space Station. It is not due to poor sensitivity of the ISS receiver but that there is plenty of competition from the other amateurs and only the loudest signal will get through. This is known as the FM capture effect and is a characteristic of FM reception.

There is plenty of information available on how to get started in using satellites. My predecessor Paul VK2TXT wrote an excellent article in the November 2008 issue of AR magazine, "Getting started on the FM birds". He describes what you need and how to operate through SO-50 and AO-51. A reprint is available for download from the AMSAT-VK website [2] under the files section. Some references to antennas (commercial and homebrew) and operating techniques are at the end of the article [3], [4], [5].

As well as these satellites, Foundation Licensees can listen to the other satellites. Some find pleasure in decoding telemetry and receiving SWL cards from the command stations.

Holders of the Standard licence can also now fully use all satellites currently in operation. The previous Novice licence was restricted to parts of 2 m and 70 cm not used by the amateur satellite service.

Good and bad news for SuitSat-2

I reported last month on the upcoming Suitsat-2 project from AMSAT-NA [6]. During July two major developments occurred.

At the integration meeting in Phoenix the transponder receiver and command receiver were tested with the rest of the hardware. The transponder was now operational and transmitting with the CW, FM and BPSK telemetry signals. At the Central States VHF Society conference in Chicago two weeks later, the functioning prototype was operational all weekend. Participants could receive the telemetry and live SSTV pictures from the 2 m transmitter.

The full package needs to be ready to go to the ISS on a cargo flight during January 2010. It is scheduled to be launched from the ISS in April 2010.

But it probably will not be dressed up in a spacesuit. Due to lack of storage space on the ISS, two Orlan spacesuits were sent back to Earth on a Progress Cargo Vessel, one of which was earmarked for the SuitSat project. Work is underway to quickly develop suitable hardware to hold all the electronics, batteries, solar panels, antennas and cameras. Without the 'suit' a new name will be given to the mission.

AMSAT's aim for SuitSat is to develop and fly a small, flexible, modular software defined transponder that can be used for future missions. ARISS's viewpoint for this mission is educational outreach. Students can listen to the recorded greetings, receive the pictures and learn about tracking spacecraft. The Russian Kursk State University is developing an experiment to be flown with SuitSat-2.

More new satellites

New satellites just keep coming. During July's Space Shuttle mission STS-127, four satellites were launched.

Dual RF Astrodynamic GPS Orbital Navigator Satellite (DRAGONSat) is made up of two cubesats. Designated as BEVO-1 and AggieSat-2, these 125 mm cubesats were launched together. Their mission is the first stage in developing a system where two satellites can be launched separately and perform an in-orbit rendezvous. DRAGONSat focuses on accurate positioning using a GPS designed for orbital operation. Your car GPS would have trouble working when moving at 27600 km/h.

BEVO-1 has a CW beacon at 437.325 MHz. AggieSat has a transmitter on 436.250 MHz using a proprietary 19k2 data modem. Any reports are welcome, even if they are just "signal heard". More details can be found at http://www.nasa.gov/mission_pages/station/science/experiments/DRAGONSat.html

The other mission also comprises two satellites. Atmospheric Neutral Density Experiment-2 (ANDE-2) uses two spherical satellites designated Castor and Pollux. Following on from the successful 2006 mission of ANDE-1 (NO-61 or OSCAR-61), ANDE-2 satellites will measure the density and composition of Earth's upper atmosphere between 400 km and 100 km.

This will give better predictions of objects as their orbits decay. Both are made of high precision aluminium spheres with a diameter of 0.48 m. They are powered by internal Lithium-Ion batteries. Castor is the heavier at 50 kg and is expected to orbit for a year. Pollux is only 25 kg and may last six months before burning up on re-entry.

Both transmit AX.25 packet telemetry on 145.825 MHz using 1200 baud AFSK at approximately 30 second intervals. A later experiment will use FX.25. FX.25 is a modified version of AX.25 which adds a Forward Error Correction wrapper around the AX.25 packet. No details have been published at this time of writing, but schematics and source code for a microcontroller project to decode FX.25 packets have been promised.

Castor is using the callsign KD4HBO-1; Pollux is using POLLUX-1. Initial reception reports from both satellites were posted on the AMSAT bulletin board. Castor has a weaker signal than Pollux, while Pollux is 1-2 kHz higher in frequency. Most of the telemetry posted has been from Pollux.

Anyone sending in telemetry may receive a QSL card. Those who get the most will receive other goodies. Websites for ANDE-2 are at:

http://www.nasa.gov/mission_pages/station/science/experiments/ANDE-2.html and

https://goby.nrl.navy.mil/ANDE/Participation.html

Dead satellites

I received feedback from the 6-monthly satellite report in July's column. A newcomer to satellites was setting up the popular tracking program Orbitron.

He had Orbitron download the latest Keplerian Elements files from http://celestrak.com/ and was surprised to see extra satellites in the amateur listing that I had not listed. Apart from one, these satellites are still in orbit but not operational. The exception is AO-27, popular with amateurs in the USA but omitted from my list as it has never been turned on over the southern hemisphere.

It may be possible for some of these satellites to come back to life as AO-7 did in 2002. Some amateurs occasionally try transponders on 'dead' satellites for signs of life. The designers of XO-53 (SSETI express) recently asked for amateurs to listen for its 9k6 digital/voice transmitter on 437.250 MHz when the satellite is in sunlight. XO-53 failed after only a few hours as a relay did not switch the solar panels over to charge the batteries. There was enough charge in the batteries for XO-53 to fulfil most of its mission.

Final Pass

It has been another busy month among the AMSAT fraternity. The AMSAT-UK International Space Colloquium held in Guildford was very successful. Available for download are slideshows from the presentations. They can be found at:

http://www.uk.amsat.org/component/option,com_wrapper/Itemid,278/

Many are thought provoking with details on some interesting future projects.

References

[1] http://www.wia.org.au/licences/foundation/documentation/

[2] http://au.groups.yahoo.com/group/amsatvk/

[3] personales.ya.com/ea4cax/paginaea4cyq/Antenaioio/ioioingles.pdf (ioio antenna)

[4] http://www.wa5vjb.com/downloads.html (cheap Yagi)

[5] http://www.amsat.org/amsat-new/echo/EchoHT.php

[6] http://www.amsat.org/amsat-new/index.php

ar

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP
Maddens Plains repeater on 146.850 MHz

VK2RIS
Saddleback repeater on 146.975 MHz

VK2RBT
Mt Boyne Repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne,
438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Once again, there is not much to report regarding unusual VHF/UHF activity.

Of regular events, the local Net run by Mike VK3KH and Rob VK3MQ on 144.150 MHz at 2030 AEST each Wednesday is always well attended. The Scramble on 144.150 MHz held on the last Sunday of the month at 2030 AEST also draws quite a number of participants. In VK4, a Net is running on 144.3 MHz on Sundays at 1930 AEST.

The main regular activity is the daily Aircraft Enhanced Propagation (AEP) activity session from 0800 to 0900 AEST each morning on 144.2 MHz. So, it is perhaps not surprising that this month's column features a fair amount of AEP-related information.

AEP Tests

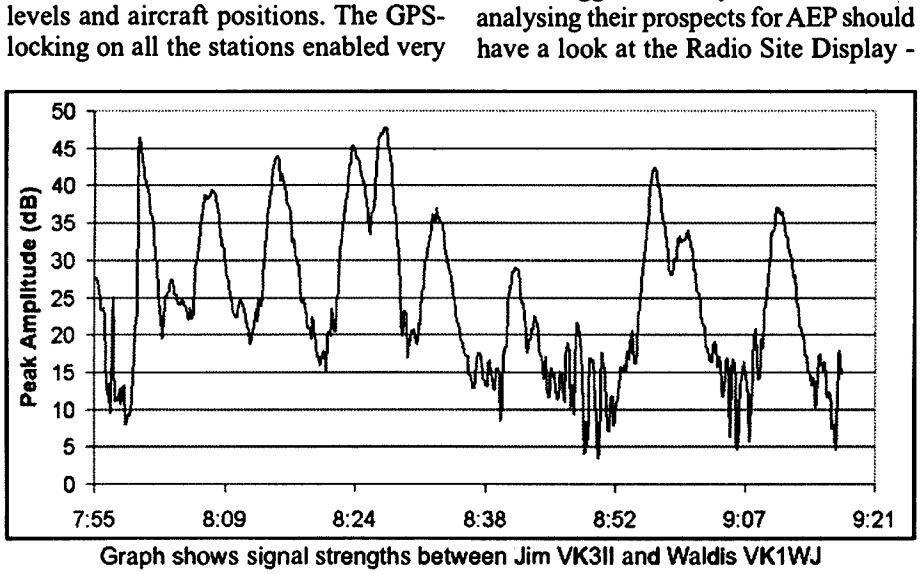
Of course, AEP only relies on aircraft and stations to be in the right places and so can be utilised throughout the year, regardless of weather. The proliferation of aircraft flying the Melbourne/Canberra /Sydney/Brisbane routes means that AEP can provide substantial lift for favourably located stations up the east coast.

Following GippsTech this year, Rex VK7MO travelled up into the VK1/2 area with his portable 2 m station, ADS-B aircraft receiver and numerous laptops. He stopped at several locations and, using signals from Jim VK3II and David VK3HZ, he recorded frequency, levels and aircraft positions. The GPS-locking on all the stations enabled very accurate logging of the troposcatter and doppler-shifted AEP components of the signals. While more tests and further analyses are to be done, the initial results provide evidence of the significant amount of signal lift that AEP can produce. The graph below shows signal strengths between Jim VK3II and Waldis VK1WJ – an almost ideal path for AEP using aircraft flying the busy Sydney to Melbourne route.

At one stage, Rex parked his station in the town of Batlow in southern NSW. Batlow is surrounded by hills and is far from an ideal VHF location. However, the Melbourne to Sydney flight path goes directly overhead. Rex reported hearing nothing of my 20-watt signal via normal troposcatter. However, when an aircraft appeared overhead, the signal peaked to 50+ dB above the noise.

What this means is that if you live in an RF "hole" (as I did in my early years in amateur radio), do not give up on VHF operation. If you can "see" (in an RF sense) aircraft flying past (even quite distant), then it is quite possible that you will be able to use AEP to contact others. The ideal situation is where an aircraft crosses the path between you and the other station, is RF-visible to both stations and is close to the mid-point. AEP also works to a lesser extent for reflections off aircraft in any direction.

At risk of beating my own drum, I would suggest that anyone interested in analysing their prospects for AEP should have a look at the Radio Site Display - information on www.vk3hz.net - and particularly the use of PlanePlotter.



Graph shows signal strengths between Jim VK3II and Waldis VK1WJ

VK3AUU Mobile

Continuing on with the AEP theme, David VK3AUU recently operated portable/mobile on 2 m from central NSW. He was using only 50 watts from an IC-706 into a halo antenna, so some assistance was required to work him from southern VK3. This assistance was in the form of AEP. Barry VK3BJM takes up the story:

Tuesday 28/7/09

David VK3AUU was operating portable (well, stationary mobile, perhaps) from near Neckarboo Station in Central NSW (QF27hw) - about 100 km NNE of Ivanhoe. He operated from a small rise near the homestead.

I was late home from work, and did not switch the radio on until 1055 Z. I heard Rob VK3XQ, Jim VK3II and Michael VK3KH on 144.1 MHz, but there was no sign of David. Jim made mention that David was also liaising on 3695 kHz, so I shot over there - whilst tuning up the quad, I was also firing up the SBS-1 ADS-B "Radar" receiver. The SBS-1 came online before the quad, and the first thing I saw was a QANTAS flight, QF566, from Adelaide to Sydney, at 41,000'. It was nearing the Vic/NSW border, just NW of Swan Hill. I joined Jim and David on 80 m, just as David was suggesting he was about to shut down for the evening. I told them of the flight and David agreed to hang in there a little longer

At about 1124z, the receiver suggested the aircraft had crossed over the heading from my QTH to David (2 degrees). Jim, Michael and I had been calling regularly. Finally, at 1126 Z I heard David and called him. He gave me a 52, and I gave him a 41. As would be expected, due to the aircraft cutting across the path at nearly 90 degrees, the period of enhancement was very brief. David later advised he also heard Michael and Jim, but David's signal was too weak to be readable in lower VK3 – it is a long haul for 50 watts and a halo... David is about 574 km from my QTH and it would be another 100 km, and a good deal more of the Great Divide, to work over for those in Melbourne and environs.

David advised before shutting down that he would be back on for the usual AE "net" window Wednesday morning (2200-2300z), as well as Wednesday night.

Wednesday 29/7/09

I was in my shack on time this time and David was again on air on 144.1 MHz, liaison on 3.695 MHz, between 1000 Z and about 1110 Z. Jim VK3II and Michael VK3KH were again both on and Steve VK2ZT was looking Neckarboo-way. Leigh VK2KRR also popped up just after 1030 Z.

There were a number of aircraft criss-crossing the path during the hour, but this only aided in increasing the number of near-misses rather than contacts, it seems. David made quite a list of moments where he heard Jim, Michael and myself. The ADS-B receiver showed that we had just missed QF582 (Per>Syd), but that QF774 (Ade>Syd) was about 10 minutes from being in position. I also had LOS with JST452 (Ade>Bris), despite it crossing the path 3/4 of the way to David – 445 km from me, and about 129 km from David. It was at 37000', and I figured that if I could get the 1090 MHz signal from the aircraft, I may as well give it a blast on 2 m... It caused some lift, but not a lot - this was at 1028 Z. Just before that, QF719 (Can>Per) had passed over heading west. In what was an interesting sight on the SBS-1 screen, QF774 (at 39000') passed directly over QF719 (at 36000') - a mere 3000' separation!

Next up we had the pair of QF583 (Syd>Per) and VOZ569 (Syd>Per). QF583 provided lift for a comfortable contact between Leigh VK2KRR and David at 1039 Z. By 1052 Z it was in position to provide me with lift, with a 41 given to David and a 52 received from him. At 1059 Z the Virgin flight brought David up again, this time only to 31. VOZ569 was cruising at 36000', whereas QF583 was at 39975'...

Afterwards, on 80 m, David suggested he would be returning to Neckarboo another time, and next time he would pack a Yagi - maybe 10-el. His location was about the same distance from Sydney and Adelaide/the Barossa as it is from Melbourne - around or less than 700 km.

Thursday 30/7/09

At 1000 Z, David appeared on 3.695 MHz advising that he was now about 15 km south of Mount Hope in QF27wa. This put him about 490 km from my QTH, and 607 km from Jim VK3II. Steve VK2ZT also popped up on 80 m to advise he was looking David's way.

At 1028 Z, QF583 (Syd>Perth) crossed my beam heading, 340 km from me and cruising at 38000'. Again, this aircraft was located 2/3 of the way to David, but still with direct LOS to my QTH. Reports of 51 and 52 were exchanged. Jim VK3II also worked David – a new grid locator for him.

David then agreed to trundle about a kilometre south of the railway line, putting him into QF26. By this time, we had been joined on air on 2 m by Michael VK3KH, and Phil VK5AKK had made it known via the Logger that he was listening for David.

A few more aircraft started to appear. At 1101 Z, Virgin flight VOZ569 (Syd>Per) crossed over at the same spot and altitude as the earlier QF583; David and I managed an exchange of 41 both ways. By this time, however, it was too far west for Jim or Michael, and I suspect it was too far north to be visible to them. However, at 1122 Z, QF566 (Ade>Syd) was located well enough to enable Jim to work David with a report of 41. The aircraft was probably about 410 km from Jim, at 41000'. Michael was heard by David, but was unable to complete.

The most interesting observation I made was that, for the combination of halo at David's end and Yagi at my end, contacts were more easily afforded when the aircraft was located 2/3 to 3/4 of the way from our location to David's location - rather than the path mid-point. We still had visibility of the aircraft - but perhaps the elevation pattern of the Halo meant David "saw" the closer aircraft better than those closer to the horizon.

New stations on 13 cm

The number of stations now active on 2403 MHz is increasing almost by the month, which should provide some lively activity for the upcoming VHF/UHF Field Day contest. Peter VK3TPR is one of the newest additions and writes:

Today (25/6), I made my first contacts using my own 13 cm equipment - a Minikits transverter that I recently built, a 600 mm x 900 mm Wi-Fi grid pack dish and a Yaesu FT-897D for a 147 MHz IF.

To ensure a good chance of making my first contacts, I chose a line of sight path from Arthurs Seat (QF21lp) to Alan VK3XPD's QTH about 70 km away and mostly over water. As luck would have it, the QTH of Michael VK3KH is almost directly in this path and a little less than halfway to Alan's QTH.

After setting up on one of the lower lookouts on Arthurs Seat (best to keep away from the tourists at the Peak Cafe) with both 13 cm and 23 cm transverters, I tuned to both of Alan's VK3RXX beacons on 1296.530 and 2403.530 and was getting about S3 to S5 signals. Looking good so far...

I then tuned to 2403.1 only to find the frequency in use ... but it was only Alan talking to Michael. Alan was 5/9+20 and Michael was about 5/1 off the back of his dish.

I quickly got into the conversation and received 5/9 reports from both Alan and Michael, although I think Mike was beaming at his neighbour's iron roof by this time - whatever works best, eh? Output at my end is only 50 mW into a claimed 24 dBi antenna.

Very satisfying indeed to make these contacts so easily today and makes me happy with the investment in the transverters.

On 23 cm, I received 5/9 plus plus reports using a 24-element Yagi and 15 watts. Antennas were only about 2-3 metres above the ground although the Lookout is a cool 247 m above Port Philip Bay. Alan's signal to me on both 13 and 23 was 5/9 plus, plus, plus.

Column Online

I have been writing and collating this column for over six years now – how time flies etc. With the able assistance of Leigh VK2KRR, Rex VK7MO and Brian VK5BC, I hope that we've provided an interesting spread of information in the area of VHF/UHF operations.

I have put all the old columns up on the web site: www.vk3hz.net/vhf_column

These are the raw files – the content and pictures (in colour) are the same as you see in the magazine but the layout is not as flash.

Finally, I would like to once again appeal for input to the column. Anything you are doing regarding building, operating, experimenting, researching ... in the VHF / UHF / microwave area – I would like to hear about it and pass on the information to others.

Please send Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX is on page 47 this month.

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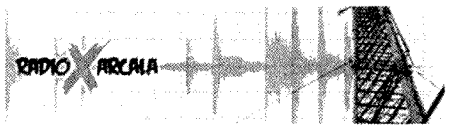
DX - NEWS & VIEWS.

John Bazley VK4OQ,
E-Mail: john.bazley@bigpond.com

I am sure the majority of readers are aware of the various DX clusters that are now available for tracking DX and associated information.

The Finnish cluster was one of the early ones to start operating and has been widely used in many countries. The WIA recently received the following news item outlining the new developments of their site.

DX Summit soon ready for 2-way communication with over 110,000 monthly users



The Radio Arcala DX Summit portal is celebrating the milestone of one million monthly hits over a course of several months and more than 110,000 people spending an average of 35 minutes on the site daily. The top five nations using the service are as follows:

USA (28.5%), followed by Germany, United Kingdom, Italy and Japan. In total, users from 170 DXCC countries have entered the service portal. With new visits approaching 19% during the month of May, an increase of users is quite evident.

In the process of making the DX Summit service more focused on younger user segments and non-amateur radio population, two features have been added recently.

Each spotting and spotted callsign is automatically linked to QRZ.COM, providing a more human link to the personal profiles of people and to their pictures. Just click the callsign and you will automatically enter the relevant QRZ.COM page. Additionally, each line carries the name of the DXCC country spotted.

In a few months time, custom selected filters will be provided to the public allowing users to select personalized spots that they would like to receive. While initially the selected spots will be sent to your personal email address, the ultimate aim is to offer an SMS (short message service) option to DX Summit users.

This service is a non-profit exercise for Radio Arcala OH8X but we are pleased to recognize Yasme Foundation and Nokia Corporation for their support of further development and defrayment of operating expenses of the portal. As the servers are in the hands of a professional service provider in the United States, some interruptions are recorded and changing the service provider is in process.

Also, a Help Desk for regular users and for software developers is being set up. Here it is suggested that DX Summit open a channel for accepting voluntary donations to keep the Help Desk operational. On a trial basis, DX Summit accepts donations through PayPal. Following a donation of 10 USD or 10 EUR, Radio Arcala will send you a full-colour Radio Arcala wall calendar post-paid. This option is valid only for the months of July and August. www.dxsummit.fi/donate.aspx

In spite of the Solar Flux Index still persisting to hover between 68 and 72, it is quite remarkable how much excellent DX continues to be worked, primarily on the LF bands but with 14 MHz continuing to carry quite a load.

So what have we in store in the coming month?

From an official press release we learn that the **Glorio**sos **Island** DXpedition is postponed yet again because of flight problems. We think, however, the DXpedition could now begin at the end of August. The runway on Grande Glorieuse suffers with problems of stability that have to be remedied quickly to allow jumbo planes to land again safely.

This postponement will allow the DXpedition to include the following new operators, David F8CRS and Bernard F5LPY. A total of seven operators will now be going to FT5G.

Two stations will be active 24 hours a day and a third will continuously monitor 6 metres. This latter station will be used as a back up on HF if propagation opens on the lower bands.

The length of the stay is still scheduled for three weeks.

John W5JON will again be operating from the hilltop QTH overlooking the Caribbean Sea, and **Marigot Bay, St. Lucia**. He will be QRV as J68JA from 20th to 30th October, including an SOAB effort in the CQ WW SSB DX Contest. Activity will be on 1.8 MHz through to 50 MHz, including 5 MHz. He will have an IC-7000 and 350 watt amplifier. For antennas John will be using an Alpha Delta DX-LB and DX-EE Dipoles, and a 3-element Yagi for 6 metres. QSL via W5JON.

The expedition to **Sable Island (NA-063)** is now scheduled to take place on 19th to 26th October. Look for N0TG/CY0, WA4DAN/CY0 and AA4VK/CY0 who will be active on 160 to 10 metres CW, SSB and RTTY with three stations (one station for the CQ WW DX SSB Contest). QSL for all callsigns via N0TG. The website for the expedition is at http://www.cy0dxpedition.com/ Plans are going fine, but the date has changed a little. The charter aircraft has been booked for October 19th through to the 26th. A Battle Creek Special antenna has been acquired and the operators are hoping to work many "Topbanders".

Seb F8IJV is heading to **Senegal** for his honeymoon. He will be at the 6W7RV QTH in La Somone from 17th October to 1st November, including the CQ World Wide SSB DX Contest. During the contest he will most likely be SOAB running low power and non-assisted. Look for him before and after the contest on 1.8 through 6 metres mostly on SSB with some RTTY and PSK. 6V7Q is the callsign that Seb has been issued by the Senegalese Telecom authority. This will not be a 24/7 DXpedition as he has other activities planned. QSL via F8IJV either direct or via the REF QSL bureau.

Willi DJ7RJ has received the call

TO7RJ to be used from **Mayotte (AF-027)** from 22nd September through to 21st October. He will be leaving the island on 25th October, so he will be active as FH/DJ7RJ during the last few days. Expect Willi to operate CW and SSB on 160 to 10 metres, and perhaps 6 metres. QSL via home call.

Tim M0TDG and Martin G3ZAY plan to be active from **Miquelon (NA-032)** as FP/home call from 24th to 27th September. They will operate CW and SSB. Low band operation will depend on equipment availability (and airline baggage limits). QSL via home calls. Martin will also try to activate **McNutt's Island (VE1, NA-126)** on 29th September.

G3BJ and G4JKS will be operating from **FO Austral Islands** using a K3 and an HF/6 antenna from September 4th to September 14th. Then from ZK2, commencing on 18th September to 25th September. Both operations will be active on 80 m through to 10 m except 17 m and 12 m.

PA8AD, PA3AN, PA3AWW and PD0CAV will be active as TY1MS from **Grand Popo, Benin** from 10th to 27th October, including an entry in the CQ WW DX SSB Contest. Their goals are to activate this DXCC Entity on 160 to 10 metres, to provide on site help and raise funds for the Mercy Ships Charity Project. QSL via PA3AWW, direct or via the bureau. Further information can be found at http://www.benin2009.com I am sure some readers will remember the 2007 radio DXpedition where the DAGOE Foundation (Dutch Amateurs Going on Expedition) activated **Liberia** with the call 5L2MS to also support Mercy Ships.

Andy G7COD is planning to go back to the **Maldives (AS-013)** in October. He will be QRV as 8Q7CQ from Embudu Island from 12th to 25th October. Andy will be using an IC-7000 running 100 watts into a "Carolina Windom CWS 160 Special antenna" hanging from a tree and an Inverted Vee Dipole for 20 metres. Activity will be on 3.5 through 24 MHz on SSB and CW.

Bill Vanderheide N7OU has announced his plans to go back to the South Pacific. This time for a solo DXpedition to **Chatham Island** and then **Rarotonga, South Cook**. He will be QRV as ZL7/N7OU from 18th to 30th September on 3.5 through 28 MHz CW only running 100 watts and a vertical. Next he will be operating as E51NOU between October 5th and 30th. From Rarotonga he will be QRV in his spare time. QSL both operations via his home call N7OU.

DK9KX will be joined by DJ7JC, DJ8NK, DJ9ON, DJ9RR, DL6JGN and PA3EWP on **Conway Reef, 3D2/C**, for an operation from 3rd to 10th October. They will be on SSB, CW, RTTY and PSK, 160-6M. QSL via DJ8NK direct or bureau. This operation is 20 years after the first activation of Conway Reef, which DK9KX also led, with the 3D2CR callsign. Conway is IOTA OC-112. This year's crew will be based on the group that activated Chesterfield Island a few years ago. The operators say new IRCs are okay. **Remember**: 'old style IRCs' with an expiration date of December 31, 2009 are not acceptable as the QSL cards will not, in all probability, go out until January, 2010. The call will be announced closer to the starting date. The web page, www.conwayreef2009.de will be available soon.

VK9LA QSLs: *"After much haggling with the Australian Customs Department, we have finally received the QSL cards from Czech Republic"*, says Bill Horner VK4FW. He had planned to have all direct QSLing done by the end of June, but this is no longer possible. On 2nd July Bill left home for a two-month family holiday. He processed and mailed as many cards as he could before leaving, so "*many of you will receive your cards within a few days, but there will be also many that will not*". Please be patient.

The callsign that A1 CT1GPQ will be using in **East Timor** between August 7th and October 3rd will be 4W6AL. Activity is expected to be on 7, 10, 14 and 18 MHz mostly CW with some SSB and RTTY. A1 will have an IC-706MKIIG using a dipole on 40 and 30 metres and square loops on 20 and 17 metres. Toze CT1GFK will be the QSL manager and pilot station for this operation. You can reach Toze at star@algarvedx.com Logs will be updated daily at http://algarvedx.com A1 will be in Dili working with a medical team, so radio activities will take place in his spare time.

And finally: **K4M - Midway Island Press Release # 5** by Tom Harrell N4XP and Dave Johnson WB4JTT.

"The K4M team has passed a very important milestone with the shipment this week (July 23rd) of radios, linears, antennas (20 of them), radios (6), computers and interfaces, thousands of feet of coax and stubs, and various connectors, switches, watt meters, and all the supplies you would expect from an operation on a remote Island. The gear will be stored in Hawaii until the supply ship leaves in three weeks to Midway.

Our charter flight to the Island is confirmed. The team is assembled. Fundraising continues on our website, www.midway2009.com If you have not visited it in a while stop by and help support our effort. All pre-expedition contributors who are on LOTW will receive their confirmations within a week of the end of the DXpedition.

This month we are highlighting three more team members. You can read all their history at www.midway2009.com/meettheops4.html."

Good luck in the pile-ups until next month.

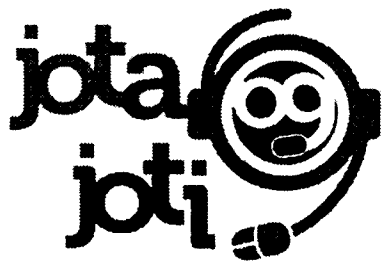
Special thanks to the authors of The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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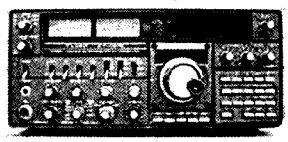
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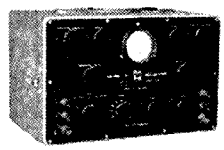
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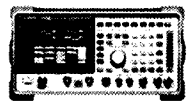
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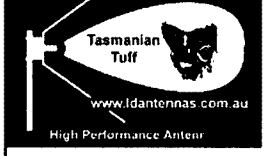
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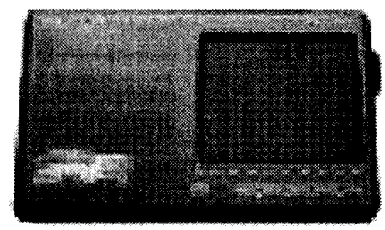
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Broadcast details

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VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 439.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busseiton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busseiton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15. Tuesday 2100 local VK7RMD NW 146.625.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.180, 145.400 IRLP 6800 Katherine and 146.900 Darwin. Sunday 2000 local 145.400 IRLP 6800 Katherine.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

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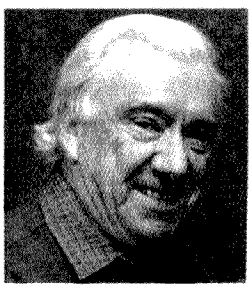


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WIA special comment



Michael Owen VK3KI

Launching the WIA Centenary

A special call to radio clubs

This month's Comment and NEWS are launching the WIA's Centenary Celebrations and starting the countdown to a memorable and busy time.

The WIA's Centenary Committee has spent the past year planning for 2010 which is the Centenary of Organised Amateur Radio in Australia.

It was on 11 March 1910 that a group of wireless telegraphy enthusiasts met at the Hotel Australia in Sydney to form The Institute of Wireless Telegraphy of Australia, and set the foundation for the Wireless Institute of Australia we know today.

The commemorative logo on this page will be used by the WIA throughout 2010 to brand the celebration.

The WIA will conduct what has become its special annual meeting and associated activities in Canberra over Friday 28 May, Saturday 29 May and Sunday 30 May as a major part of the centenary celebrations.

During all of May 2010 the WIA will be using the special callsign VK100WIA, and under its licence WIA affiliated clubs will be able to take turns to use the callsign from 1 June to 31 October.

To enable this to happen, a roster of participating clubs will need to be set by the end of March 2010.

The WIA will be offering all amateurs in Australia and overseas a very attractive award, the WIA Centenary Award.

The Award rules and certificate, the VK100WIA QSL card, a display poster, electronic files and style guide for the commemorative logo and other information will all be placed on the WIA website on 3 October.

In addition, a range of exciting merchandise will also be on offer – do look at the WIA website on 3 October. The site will be updated as further plans develop.

It is expected that the callsign will be highly sought after on air, in order to obtain both the VK100WIA QSL card and the WIA Centenary Award.

Clubs are asked to plan now how they are going to celebrate the centenary. The WIA hopes that each club (or perhaps a group of clubs) will conduct an event that promotes amateur radio in its community, and also celebrate the event for their members and perhaps others in the local community.

These events may be part of an activity they already conduct, perhaps an annual hamfest. The use of the VK100WIA callsign may be in association with these events, or may be quite separate.

Since there are around 140 affiliated clubs, and only 153 days in the five months from 1 June 2010, initially three day roster slots for use of the callsign will be available.

We know that not all clubs will want to, or be able to participate in the special callsign activity by putting it on air.

A booking facility will be on the WIA website from 3 October, and through it clubs will be able to reserve a three day slot for their use of the callsign. It will operate like an airline seat booking facility, so if another block is still available, the club will be able to give up its first choice and select a new block.

Depending on the demand from clubs, later on, clubs may be able to extend their period of operation if they wish and if the time they want is still available.

If the demand exceeds our expectations, then it will all be on a first come first served basis.

At the same time as the club reserves its slot for the callsign, it will be asked to tell us about its plans to celebrate the centenary and promote amateur radio. Of course, these plans will develop and so clubs will be asked to ensure that their information is always up to date.

All times, including the times for use by the clubs will be in UTC, and accurate logging in UTC will be essential. While clubs may use paper logs, it is hoped that the online logging facility on the website will be the main method used.

Those operating with the callsign are asked to frequently announce "*This is VK100WIA Celebrating the Century of Organised Amateur Radio in Australia, being operated by members of the (..name of club..) in (..town/city/suburb and state..).*"

Participating clubs will be assisted to seek local publicity about the centenary celebration and their involvement. The WIA will provide a media kit, other support plus a display poster.

Now is the time for WIA affiliated clubs to plan their activities between 1 June and 31 October 2010 and get on the VK100WIA callsign roster before the end of March 2010.

ar

WIA News appears on Pages 8-9

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3PF

Centenary celebrations

The Centenary Committee has been hard at work. In this issue, you will find announcements regarding several initiatives that will be running during 2010, celebrating 100 years of organised amateur radio in Australia.

This month we see a different layout – as a once only event – to announce the Centenary celebrations. To maximise best use of colour, we have swapped the positions of our Contents page and WIA Comment. News has been moved (and expanded) to pages 8 and 9 for this month. We should be back to normal next month!

Why is this so important – the Christmas break is fast approaching and it is important that clubs carefully consider if they wish to be directly involved in the Centenary celebrations through the use of the special callsign. Make sure your club makes firm plans early so that you will have a chance of operating with the special event callsign.

New callsign

Somewhat out of the blue, I received a telephone call a few weeks ago. The caller was asking if I was interested in obtaining the callsign VK3PF. After thinking about the offer for a couple of weeks, I finally called Dick to accept the offer.

It turns out that Dick was a close friend of an amateur from South Gippsland with whom I was in fairly regular contact prior to his death early this year. Prior to his death, Len VK3LM had mentioned to Dick that I might be interested in Dick's callsign, if Dick ever wanted to pass on the callsign.

Dick is still licensed, having regained his previous callsign – VK3DDS. The application to transfer the VK3PF licence was sent off to Canberra and so now I have VK3PF – a two letter callsign with the suffix being my initials. Many thanks, Dick!

I have applied to the ACMA, through the appropriate mechanisms, to regain the old callsign – VK3KAI. I have held it for many years, since the introduction of the "Combined calls". I will eventually stop renewing that callsign. However, I will keep it for a while, at least until I have changed over my registrations at several electronic mailing list servers and I stop receiving emails via the old email address. I now have a new WIA email address that reflects the new callsign.

New procedures for Hamads

Following some discussion, it has been decided that Hamads will be collated by the Publications Committee, as if the material was a column. The changes are reflected in the new details listed in this issue of *AR*. Basically, email your Hamads material to hamads@wia.org.au If sending material via snail mail or via fax, send it to the WIA office, clearly marked as "Hamads".

2010 Callbook

The preparation of the 2010 Callbook is well underway. As this issue of *AR* becomes available, the Callbook should be almost ready to go to print and available for delivery late in October. It is expected that prices will be the same as for last year. Why not get together with your fellow local radio club members and have the club arrange for a bulk purchase? This will ensure prompt delivery to the club with savings in postal charges. Alternatively, keep your eyes open for a WIA stand at the next hamfest – I am sure that copies will be available for sale, once delivered from the printer during mid October.

RF safety

I have received a couple of comments regarding the cover photo of the September issue with regard to RF safety.

Exposure to RF fields is not an issue to be taken lightly – we all need to be very careful about exposure to electromagnetic fields, for both ourselves and for anyone within the immediate proximity. What does that mean? The Foundation Licence Manual gives some guidelines, but the easiest option is to hunt out the VK3UM Radiation Safety Calculator, part of Doug's excellent suite of free software. You can then select the operating band, antenna type and power level. The software will tell you the exclusion distance that everyone should be from the antenna to be safe.

I am assured by the author Compton Allen VK2HRX that the photo was a "set up" – this was not how things were actually done on the day! Some of the photos have been staged to make the photographs look more impressive.

73, Peter VK3PF **ar**

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Hamads and advertising material 10th day of previous month

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Our cover this month

A Scout having fun with a handheld during a past JOTA event. Get involved and help out this year—your local club should be able to point you in the right direction. Photo by Robert Broomhead VK3DN

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

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Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

The HB10 transceiver

Bruce Kidgell VK3BMK

This is a story of an old transceiver, built in the late 1950's period, and which had not been used for over forty years, that the author decided to restore, more for nostalgic reasons than any other, given that he had actually built the unit when a much younger, and much less experienced 'electronics technician'.
To all those readers who lived through this largely home-build era, the article will bring back many memories of practical self-development in the areas of receiver and transmitter theory and practice.

Early days - the 1950s and 60s

The HB10 was designed and built in 1957/58. It was the third in a series of receivers built in the 1950s. The first was a two valve TRF that my father built, with me looking on and learning. The second was a four valve superhet with plug in coils from an ARRL design in the 1942 *ARRL Handbook*. This was more of a joint project with my father. His expertise in the mechanical construction and winding of the plug in coils was much better than mine. We also had assistance and good advice from Neil Templeton VK3HG and Jamie Ferrier VK3MC, and also a supply of goodies from their respective junk boxes.

We lived on a farm in western Victoria and the only power available was 32 volts DC from the home lighting plant that was a generator belt driven from a 1924 vintage Lister stationary engine. The Lister's main job was to drive the milking machinery, so the batteries were charged when the cows were being milked.

The only tools available for constructing the radios were hand operated drills, hacksaw, files and a set of chassis hole-punches to make the holes for the valve sockets. The soldering was done using a small plumber's soldering iron heated up on the kitchen stove.

The four valve superhet worked well and the log book shows that many DX stations, both amateur and commercial, were heard. Modifications were added over the next few months. The first was the addition of an audio output stage using a 38 output pentode, later changed to a 6V6 when the 38 failed. This was followed by the addition of a 6AC7 RF amplifier stage, S meter, and back-to-back IF transformers for more selectivity from the 1600 kHz IF stage aided by regeneration. A 28 V genemotor from army disposals provided the HT. There were separate tuning controls for the RF, mixer and local oscillator stages (the oscillator had both main and band spread tuning) and, together with the regenerative IF stage, the tuning in of a station and then optimising the tuning took quite a few seconds to complete.

The receiver was largely paid for by trapping and selling rabbits to the local cool store in Coleraine.

In early 1956 I decided that I would build a better receiver and much time was spent pouring over *ARRL Handbooks* and advertisements in *Radio & Hobbies*, and coming up with the basic design. I decided to purchase a 'Gorler' coil turret that was designed to cover 500 kHz to 30 MHz in six bands for receivers with a 455 kHz IF. I think this was purchased from Warburton and Franki in Melbourne. We also had an account with Radio Parts in North Melbourne where I was able to purchase items such as IF transformers and valve sockets, and the like, that were beyond the scope of our junk box. The receiver was largely paid for by trapping and selling rabbits to the local cool store in Coleraine.

After a few months work, the receiver was working but I had already found one major problem. I had sited the coil turret in the middle of the chassis and it was extremely difficult to get at the coil slugs and trimmer capacitors to align the front end.

So, the MK2 came into being. The receiver was dismantled and the turret moved to the left hand side of the chassis where three large holes were punched in the side to allow access to coil slugs and trimmers. The valve line-up changed with a cascade RF amplifier using a 6J6 replacing the 6BA6, and a 6BA6 replacing the 6SK7 in the first IF stage. The third IF stage originally planned did not eventuate but the 6SL7 infinite impedance detector / BFO did, replacing the 6C8. Another 6SL7 for the audio preamp / S meter replaced the 6D6. A noise limiter using a 6H6, and a crystal calibrator using a 6C5, completed the upgrade to the MK2.

The block diagram of the HB10 Mk2 is shown in Figure 1. The first stations were logged on 28th February 1958.

In 1959 the farm was sold and we moved to the big smoke, Mount Waverley to be precise. My father and I studied for our AOCP. Dad achieved his in 1959 (VK3AUK) and I finally obtained mine (VK3ASN) on the third try in 1960. 14 WPM CW was my problem.

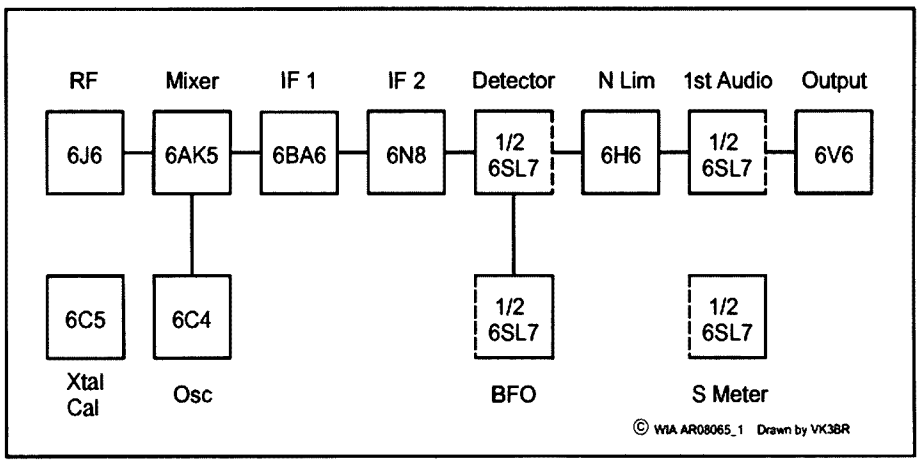


Figure 1: Block diagram of the HB10 Mk2 receiver.

My first transmitter was a modified Command transmitter using a 6V6 as the power amplifier. This had the huge DC input power of 5 watts. The receiver was the HB10. The Command transmitter was soon retired and its place taken by a home-built transmitter using a Geloso VFO driving a pair of 807s. Screen grid modulation was used, driving the 807s in push pull and modulating them, and by having the outputs in parallel it operated as a high level balanced modulator and we were able to transmit a double-sideband suppressed-carrier transmission.

Several modifications were made in the early 1960s. These included an AC power supply; band-spread by fitting a three gang capacitor and dial in parallel with the main tuning gang; and revising the BFO, detector and calibrator circuitry, and the layout.

The 6J6 failed and was replaced, firstly with a 6BA6, and then with a 6AH6, a sharp cut off high mu RF pentode.

In 1964 I purchased a Kingsley AR7 and the HB10 was put aside, but somehow it survived many moves and shack clearances until, in August 2007, I decided to check it out and see if it could be restored.

The restoration - 2007/2008

The poor old receiver was now 50 years old. Rust was appearing through the cabinet surface and front panel, and there was 42 years accumulation of dust and cobwebs. Not a pretty sight! The shack vacuum cleaner soon sorted out the dust and spiders, revealing the sorry sight of ancient and leaky capacitors, and resistors that were old when they were salvaged for use 50 years ago.

There was also the problem of a suitable power supply. The 1960s AC supply had long since disappeared and a search through my junk box for a suitable transformer did not come up with anything capable of supplying the required 250 volts at 100 mA. Fortunately, Peter VK3AUO kindly donated a power supply that was surplus to his needs and that could be easily modified to do the job.

I decided to include a VR150 regulator to provide a regulated 150 V supply for the mixer, local oscillator, BFO and the reference voltage for the noise limiter. This was a serious omission in the original design.

With the power supply problem solved it was time to have a closer inspection of the electrics inside the set. Shock, horror! Was my soldering really that bad back then? Look at those long leads on the bypass capacitors. No common earth points for the various stages.

When I built this set I had never actually seen inside a communications receiver. My short experience had been with old broadcast receivers and what I could glean from books and magazines, and after many years experience in the radio communications industry the HB10 now looked very, er well, 'amateurish'.

I decided to plan the restoration. I wanted to restore it to its original performance and specification. It would not be used as a station receiver but would provide entertainment in the shack in the form of short wave broadcasts, WWVH for setting clocks, and also demonstrate the strengths and weaknesses of a home built receiver of the 1950s.

In 1964 I purchased a Kingsley AR7 and the HB10 was put aside, but somehow it survived many moves and shack clearances until, in August 2007.....

If I could improve its performance without changing the basic design and construction by using the knowledge and experience gained over many years, then that would be OK. As it was built before SSB appeared on our bands, I decided not to include a product detector. However, I did decide to carry out two improvements that were on the books to be done before it was retired. These were the addition of cathode followers for the local oscillator and the BFO. This would allow tighter coupling to the mixer and detector without pulling of the oscillators. These could be added without having to increase the number of valves so it is still an HB10.

So, together with these two additions, the restoration would address the external cosmetic appearance, the replacement of all faulty and suspect components, the tidying up of the wiring and earthing, and a complete realignment.

I do not think a complete circuit diagram was ever made, therefore the first task was to sit down and circuit trace the whole receiver. A secondary result of this was that a couple of original wiring errors were revealed. The documentation for the Gorler Turret had also long disappeared and there was no record of the coverage of each band, nor the alignment points.

Starting with the audio output stage and working towards the front end, the components and voltages of each stage were checked, the wiring tidied up, and faulty components replaced. After freeing up the ferrite slugs that had seized, the IF stages were realigned from 500 kHz back to 455 kHz. This was the first time a signal generator had been used for alignment on the set.

A few hours work and everything was working, but three problems immediately stood out. Firstly, there was considerable instability with neither the IF or RF gain

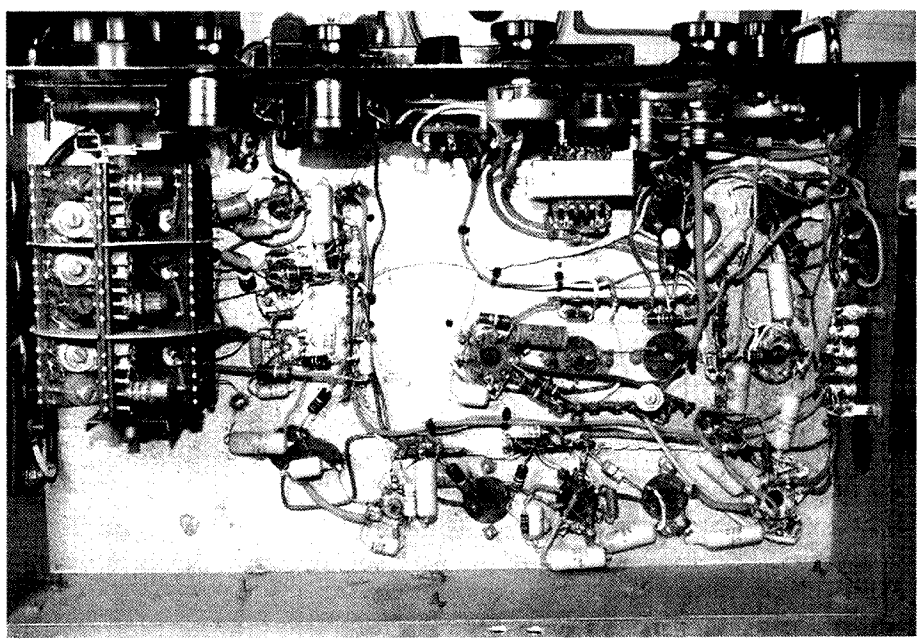


Photo 1: Inside view of the HB10.

controls able to be turned up to maximum before oscillation occurred. Poor earthing practices, and deterioration of the earth points by corrosion, were suspected of being the main reason for this. And the last two problems were distortion higher than I was prepared to accept, together with 50 Hz hum on stations received. In spite of this the set actually worked for the first time since 1964.

To combat the instability, every earth point on the chassis was cleaned of corrosion. Around the front end the earth connections were soldered directly to the chassis. This, and better decoupling on the HT supplies to the RF and IF stages, solved all instability problems.

The twisted lead 6.3 V AC heater wiring was floating above ground, but earthing one side of the 6.3 V supply where it entered the set cured the hum problem. The distortion problem was cured by optimising the operating conditions of the infinite impedance detector and fixing a wiring error in the noise limiter stage.

A cathode follower, using the second half of V6, a 6SL7 twin triode (the first half is the detector) was inserted and the coupling to the detector increased to just below the level where pulling of the oscillator was apparent. This improved the set's ability to handle strong SSB and CW signals.

Now it was time to turn my attention to the front end alignment. Firstly, the Gorler coil turret was dismantled and all the contacts were cleaned and burnished. Then I did away with the band spread tuning. It was an add-on in the early 1960s and had long leads. This lead to strange coupling effects and frequency instability on the higher bands, and also had made it difficult to align the front end, so out it went. I also decided to change the 6AH6 RF amplifier valve back to a 6BA6 and run the AVC line to it, but not to add the cathode follower to the local oscillator just yet.

The tuning capacitor and dial drive were not as smooth as I would have liked and there was a tendency for the set to jump a few kHz from time to time. The tuning capacitor was removed, stripped, bearing faces and ball bearings cleaned and then reassembled with light grease, and then finely adjusted for no endplay. Copper braid earth straps from the chassis were attached to the brass wires, acting as brushes, which bear against the rotor shaft and so provide the best possible earth circuit for the tuning capacitors. The planetary dial drive was also dismantled, cleaned and lubricated.

All went well until we got to band E. No matter what I tried, I could not get the mixer circuit to track at all

I had a rough idea of the frequency range for each of the six bands so, starting with the lowest band, 550 kHz to 1100 kHz, I started the alignment. This proceeded OK with some to-ing and fro-ing with the ranges when it was obvious that slugs were either too far in or out.

All went well until we got to band E. No matter what I tried, I could not get the mixer circuit to track at all. I could peak it at the high end with the trimmer capacitor but 'no go' at the low end with the coil. I vaguely remembered that it had never worked properly but it had been possible to peak it at 14 MHz so that it worked on 20 metres OK.

It was time to investigate. Out came the Band E biscuit and an inspection showed that the wiring to pin three that connected to the tuning capacitor in the mixer circuit had never been connected! So much for quality control and testing at the Gorler factory! After making the connection on the biscuit, band E aligned very well.

But that was not all. Band F, 15 to 30 MHz had never worked properly, either! The CRO showed that the local oscillator output was low and it ceased working altogether over the lower half of its frequency range. Out came the band F biscuit and an inspection revealed that it had a wiring error in the oscillator section. With the error corrected, Band F performed as it should.

I now tackled the job of inserting a cathode follower between the local oscillator and the mixer. My first inclination was to use a 6U8 triode pentode as a cathode follower / mixer but the pin outs did not allow a neat and logical layout to be achieved. So I went ahead with the second option of replacing the local oscillator valve, a 6C4 triode, with a 12AU7 that is actually two 6C4s in one envelope. The only down side being that I had to fit a B9A base in place of the original B7G. The circuit worked very well, allowing much tighter coupling to the mixer. In the original circuit there was no actual coupling capacitor, the coupling being stray coupling to any number of components within the front end.

A quick touch up on the front-end alignment and it was time to do the cosmetic restoration.

The front panel was removed, wire brushed, sanded down and the rust treated with rust converter. The metal cabinet was given the same treatment and then both were primed and given a finishing coat of Brunswick Green enamel. The front panel was reattached to the chassis and control labels put in place, and it looked very handsome. The last job was to plot the tuning curve for each of the bands

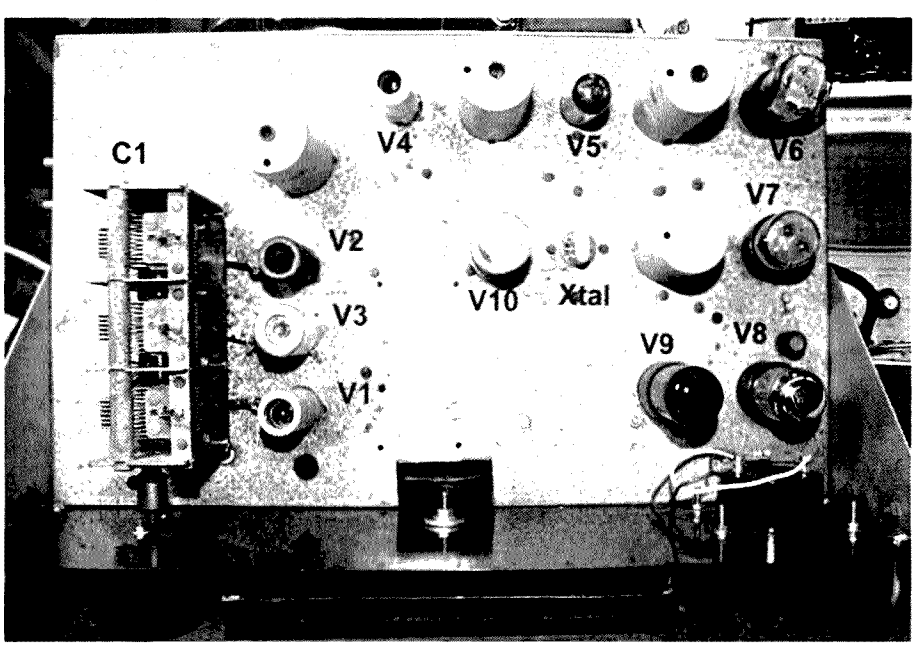


Photo 2: The top view of the HB10.

onto the six 'Tuning Charts'. These are contained within a modified picture frame attached to the front panel.

What would I be tempted to do to improve the old girl? Its weakest link is the tuning capacitor and dial drive, followed closely by the lack of shielding between the front end stages. Tuning on Band F, 15 to 30 MHz, is so touchy as to be almost unusable. Therefore, I think I would rebuild the front end into a really solid, thick aluminium box with shielding between the RF mixer and local oscillator stages. The two new high quality tuning gangs for main tuning and band spread tuning would be on top with both matched to better tuning mechanisms than the 50/1 planetary drive that it currently has. A product detector with a shielded BFO would also be a worthwhile improvement.

However, I don't think this will happen as there are other projects waiting. The first one being the restoration of an ex RAN HF WT1051B transmitter manufactured by TCA in Sydney in 1961. It is good for 150 watts DC input on AM or CW. This was last used about 15 years ago on 160 and 80 metres. Come to think of it, the HB10 would make a good companion receiver for it.

Circuit description and alignment information

The HB10 Mk2 is a 10 valve, single conversion super-heterodyne receiver. A Gorler six band coil turret provides the tuned circuits for the RF, mixer and local oscillator stages. The coil turret was designed to provide coverage from 500 kHz to 30,000 kHz in six bands for receivers with a 455 kHz IF amplifier chain.

One RF stage is provided (V1) using a 6BA6 variable mμ RF pentode. The gain of the stage is controlled both manually by the RF gain control in the cathode circuit and by the AVC line. When the 'Op / Stdby' switch is in the 'Stdby' (standby) position, an 82 kΩ resistor is placed in series with the cathode resistors of both the RF and first IF stages.

The mixer stage (V2) uses a 6AK5 RF pentode biased to something like class AB by the 6k8 resistor in the cathode circuit. Both the anode and the screen grid voltage are supplied from the 150 V regulated rail. The signal from the RF stage is fed to grid one via a 56 Ω resistor located on the coil turret biscuit. The local oscillator signal is also fed to grid one via a 27 pF ceramic capacitor.

V3 is a 12AU7 twin triode. It is the equivalent of two 6C4s in a single package. One half of this valve is used as the local oscillator and the other half is configured as a cathode follower. The oscillator is a tuned grid type and the HT is supplied from the regulated 150 V rail. The output is taken from the anode of the oscillator to the grid of the cathode follower. The output from the cathode follower is applied to the grid of the mixer via a 27 pF ceramic capacitor.

The first IF stage (V4) uses a 6BA6 and is of a standard design. The gain of the stage is controlled both manually by the IF gain control in the cathode circuit and by the AVC line.

The second IF stage (V5) uses a 6N8 duo diode pentode as an IF amplifier and AVC rectifier. The amplifier has AVC applied but no manual control. The delayed AVC is derived from a sample of the IF output signal from the anode of the 6N8 and is rectified by one of the internal diodes. AVC is applied to the RF stage and first and second IF stages. The AVC voltage can be disabled by the 'AVC Off' switch.

V6 is a 6SL7 twin triode. One half being an infinite impedance detector and the other half being a cathode follower feeding the BFO signal into the grid of the detector.

The series noise limiter uses a 6H6 twin diode (V7) with manual level control. The audio then is amplified by half of V8, a 6SN7 twin triode. The other half of V8 is a bridge circuit for the S Meter, with the AVC voltage being applied to the grid, with the bridge components and meter in the anode circuitry.

V9 is a 6V6 beam power output beam tetrode. Audio from V8 is applied to the control grid via the 'Volume' control. The audio output is applied to a built-in eight inch twin cone speaker. Audio for the headphones is supplied from the anode of the V9 via a 0.1 mF capacitor. A simple top cut filter consisting of an 820 pF capacitor between anode and G2 can be switched in by the 'Tone' switch. **ar**

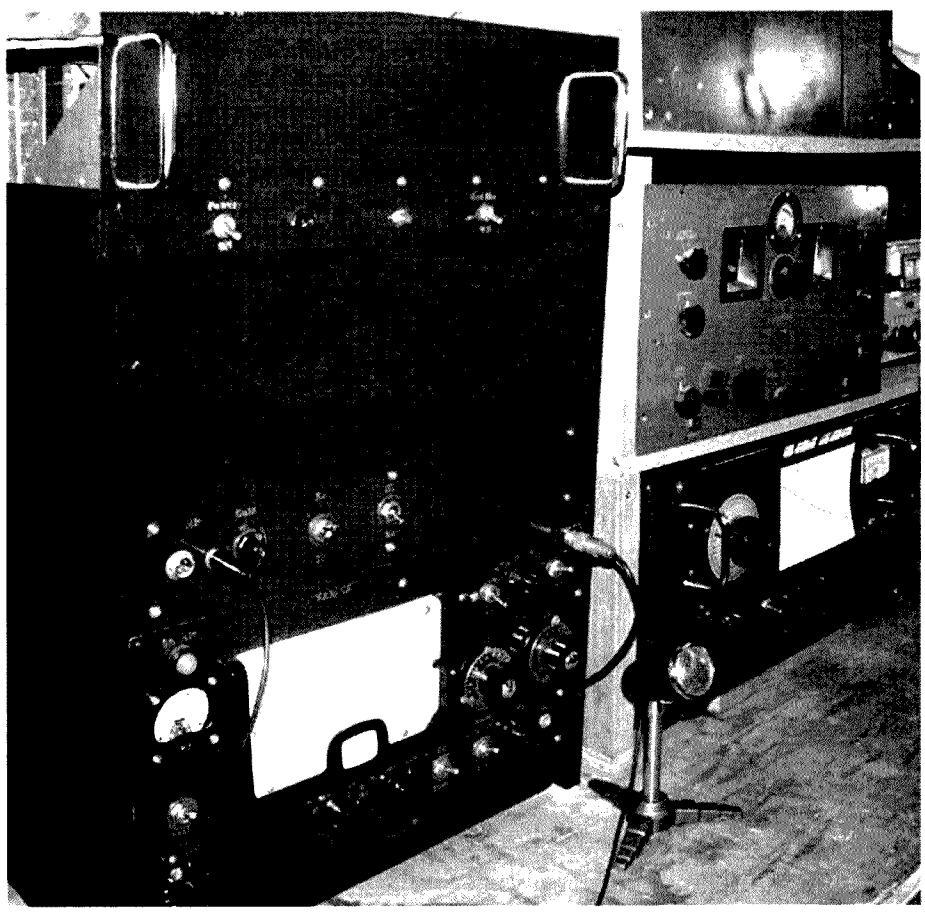


Photo 3: The restored HB10 is on the bottom right. To the left is the restored ex VK3AUL transmitter. The power supply is on the top, the modulator in the middle and the transmitter on the bottom.

About The WIA Centenary

The celebration is recognition of the foundation of the WIA and the very start of organised amateur radio in Australia during 1910. It has also helped to focus renewed attention on the early history of amateur radio in this country through careful research in a way not previously known to have occurred.

The beginnings

Prior to the Wireless Telegraphy Act of 1905 there was no real regulatory control of the radio spectrum, although early demonstrations and experimentation began in Australia in the late 1890s. At the time the government wanted to protect its revenue from the wired telegraph system and initially considered wireless telegraphy to be of little use, but it then became useful for ship to shore communications.

Private wireless experimenters were considered a hindrance to the emerging maritime use of wireless. Others began to recognise a greater potential use of the technology. Conflict between the commercial and amateur use of the spectrum was evident and licensed operation began in 1905.

Within five years experimenters needed to get organised for their very survival. The experimenters experienced what they felt was harsh treatment by authorities in respect to interference investigations and also the requirement to pay a three Guineas ($6.30) licence fee.

Organised amateur radio

On 11 March, 1910 a meeting of like-minded people in the Hotel Australia, Martin Place, Sydney, formed the Institute of Wireless Telegraphy of Australia, and soon after dropped the word 'telegraphy' from its name.

Chairman of the founding meeting, George Taylor, proposed "the formation of an institution amongst experimenters and enthusiasts in wireless for their mutual benefit."

A similar organisation was formed in Melbourne - the Amateur Wireless Society of Victoria, on 30 November 1911 at a meeting attended by 50 enthusiasts. In 1913 it changed its name to the Wireless Institute of Victoria, and then became the Wireless Institute of Australia, Victorian Division.

Then followed The Wireless Institute of Queensland (1912) and the West Australian Radio Club (1913) became the Wireless Institute of Australia, Western Australia Section.

War-time security measures

Due to World War 1 all experimental stations were closed from August 1914. The Wireless Institute of Victoria decided to maintain the right to wireless experimentation after the war and offer its services during the conflict.

The experimenters were back on air after the war, although not immediately and even then with many restrictions. Those in South Australia formed a WIA branch in November 1919, the Tasmanian Division of the WIA (1923) and in the same year the Launceston Wireless Club was granted affiliation. Suburban clubs also began, for example the Waverley Amateur Radio Club in New South Wales (1919) which continues today.

A photograph of some of that club's founders feature in material used for the centenary celebrations.

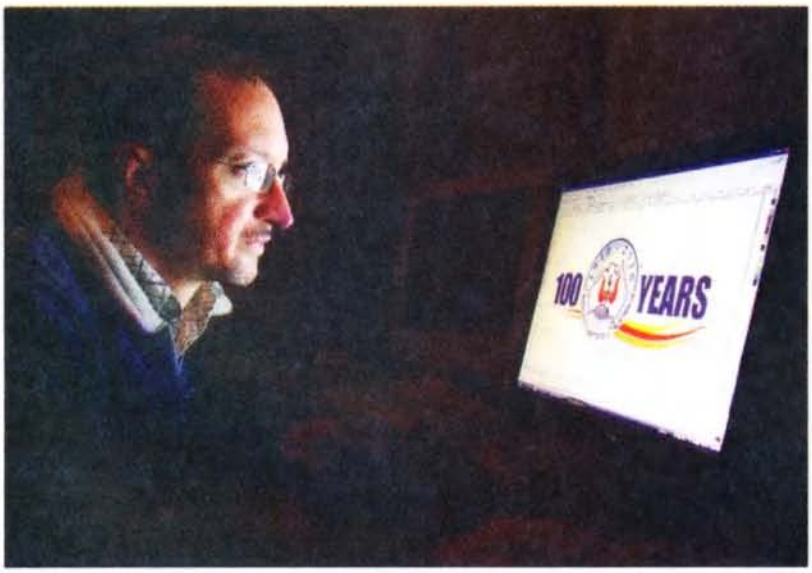
While the history can only be briefly covered in this article, the post-war era was an exciting time in many ways when wireless became radio through voice transmissions. Experimenters were achieving the wireless contacts with overseas countries.

A nation-wide organisation

A meeting held in Melbourne in May 1924 saw the establishment of a nation-wide organisation representing the experimenters, an outcome that had been desired for some time by the Postmaster General who had responsibility for wireless.

Exactly 100 years on from that first meeting in Sydney, the experimenters, now known as radio amateurs, can legitimately celebrate the establishment of their representative organisation, the Wireless Institute of Australia - the oldest such group in the world.

Creating the WIA commemorative logo



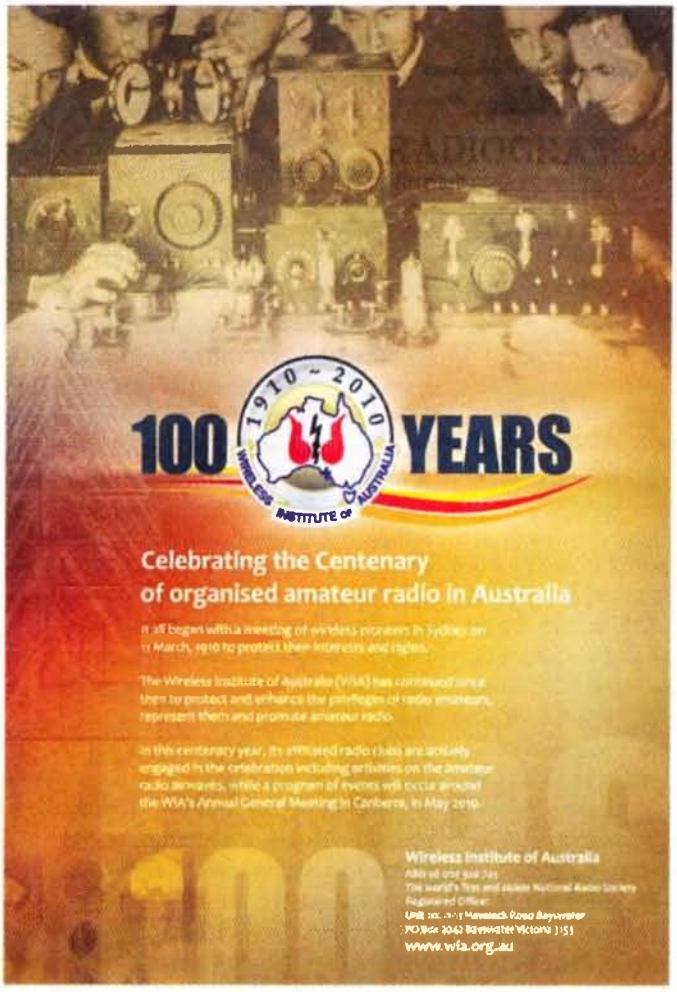
Graphic designer Ivan Smith applying finishing touches to the Centenary logo

The WIA Centenary Committee considered various concepts developed by Ivan Smith, the WIA's graphic designer. In recent years Ivan has been developing much of the Institute's new material with major projects including the Foundation Manual and recent WIA callbooks. Ivan's concepts were short listed, resulting in a number of draft designs, with the final logo design being selected and finishing touches applied.

In milestone celebrations like the centenary, a distinctive logo often plays a key role in branding and marketing. Those who remember the WIA 75 celebrations will recall it had a commemorative logo that featured everywhere.

In line with a brief for this new logo, Ivan has created one that boldly proclaims the 100 years while incorporating the current WIA logo.

It captures a sense of the on-going influence of WIA into the future as the national organisation representing Australian radio amateurs. Ivan



WIA Centenary Poster

WIA Centenary Poster

The WIA is proud to release the WIA Centenary poster created to help promote 100 years of organised amateur radio in Australia. The imagery in the poster tells much of the history of radio. There is much more to it than may first be obvious, spend time to study the detail to explore the rich history of amateur radio in this country. Those pictured on it are some of the founders of the Waverley Amateur Radio Club of New South Wales.

The poster is full colour A1 size and ideal for use in public displays. The WIA will be sending Centenary posters, along with some new Calling CQ posters and Calling CQ brochures, to each affiliated radio club.

Members will also be able to purchase copies of the posters for their shack; they will be on sale in the 'merchandise' section of the WIA online bookshop.

Centenary merchandise

To help members celebrate the WIA Centenary, a range of 'limited edition' merchandise is to be available through the online bookshop on the WIA website.

The range sporting the WIA commemorative logo already includes jackets, vests, business and casual shirts, polo shirts, caps and hats and a WIA lapel badge. It is being expanded to include other commemorative items.

Members are encouraged to keep an eye on the website for the latest products.



WIA Centenary Polo shirt

Historical Articles

In the August issue of *Amateur Radio* the WIA Centenary Committee published a call for historical articles for publication during next year's celebrations.

Valuable material has been received from Rex VK7MO, Christine VK5CTY, Deane VK3TX, Walter VK6KZ and Justin VK7TW.

The Committee is still looking for more material, and is looking for further material to preserve our history and to record something about an event, a club or outstanding amateur. And, says Peter Wolfenden VK3RV, Centenary Committee member coordinating this aspect of WIA's Centenary Year, what about something about the future?

Please send your contributions to Peter at the WIA office or by email at centenary@wia.org.au

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describes it as having "a warm and inviting feel, an energy and vibe against white and black backgrounds as well as the gold theme colour for posters and other printed material."

The master logo has been created in a vector format, thereby making it infinitely scalable to any size without losing detail. It has been made available in a range of formats suitable for print, the web, embroidery for clothing, as well as much smaller sizes such as was required to create the centenary lapel badge.

The many applications and uses of the logo are all part of the branding or uniform identity for centenary events and activities.

Our commemorative logo, along with usage guidelines and style guide may be downloaded by members from the new centenary section of the WIA website under the news and events menu. Members may include the logo on their QSL cards and websites, simply ensure adherence to the usage guidelines. The WIA holds the copyright of the logo, and commercial use is not permitted unless written permission is obtained from the WIA.

Foundation Corner Two

The half wave dipole

Ross Pittard VK3CE
vk3ce@amateurradio.com.au

Following on from the first edition of this column, I thought we might look at a basic HF antenna for those just starting out. If you talk to ten radio amateurs you will probably get ten different antenna recommendations. This is because your antenna is probably the most important part of any station and a great deal of experimentation is always carried out on antenna designs.

I have found that one of the simplest antenna to build is the half wave dipole or inverted vee, suitable as a home base station or portable antenna; it is easily made from hardware store odds and ends.

As modern solid state rigs are designed to work into a 50 ohm load and, just by chance, our inverted vcc antenna has a theoretical impedance of 50 - 75 ohms, once cut to frequency we can use this aerial without the need of an antenna tuning unit (ATU).

Another advantage of the inverted vee is that a number of dipoles for various frequencies can be fed from a common feed point. At my home station I have an 80 m, 40 m and 20 m dipole all fed with a common feed line and balun.

The 40 m dipole can be used as a 5/8 wavelength antenna on 15 m thus providing a useful HF multi band antenna set up for the popular bands.

To calculate the approximate antenna length I suggest using the formula from the Foundation Manual, page 98:

300*0.95 / frequency in MHz = length in metres

For example an antenna cut to resonate at 7.1 MHz would be

300 * 0.95 / 7.1 = 40.140 metres

Remember that this is the total length end to end and we will need two pieces of wire approximately 20.070 metres long for each side of the dipole. It is always a good idea to leave these longer than calculated as extra length can be trimmed or folded back on itself once tuning is completed. If the antenna is to be installed as an inverted vee, the tuned length will be slightly shorter than calculated.

The best type of wire to use is 'hard drawn' copper wire; this has not been annealed (heated) after being drawn, it is stronger, but less flexible than 'soft drawn' wire used in electrical building cable.

If using building or earth cable, be aware that it will probably stretch over time and you may need to re-tune your antenna after a few months. Both types are available from electrical merchants and can often be found second hand at hamfests.

The centre feed point mounting for the antenna can be as simple as using a spare insulator, but it is always good practice to have a balun at the feed point to reduce the likelihood of RF currents on the outer of the coax. A simple choke balun can be made by coiling 8-10 turns of the feed coax in a loop about 150 mm in diameter as close to the antenna as possible and secured using a couple of black cable ties.

When setting up the 80 m dipole you will only be able to get a good match over a small portion of the band and it will be necessary to use an ATU if you want to use the entire band; on 40 m and above a dipole will be useable across the entire band.

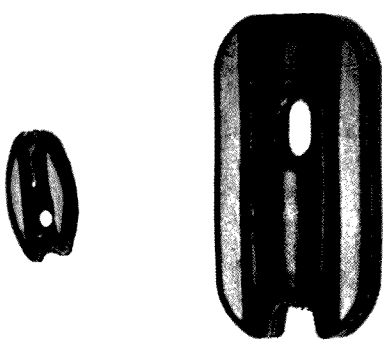


Photo 1: Example of commercial insulators.

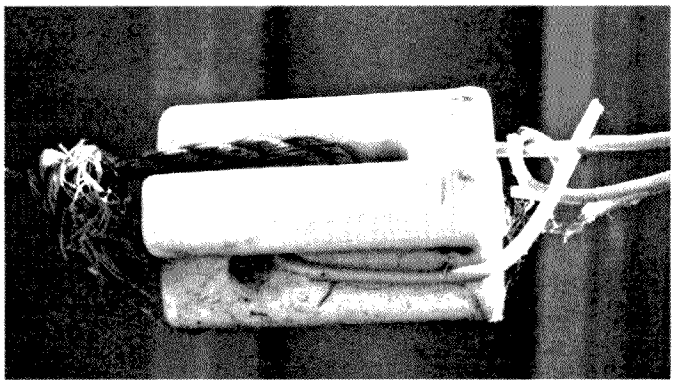


Photo 2: The 80 m dipole electric fence insulator (complete with cobwebs).

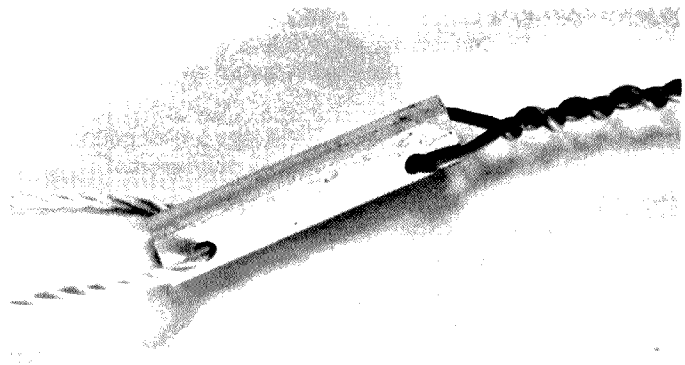


Photo 3: The homebrew PVC insulator.

If building the multi-band version I suggest tuning the lowest band first and progressively move up in frequency adjusting each set of dipoles as necessary.

There will be a little interaction between the dipoles and it is always a good idea to go through the tuning process a couple of times. Once you are satisfied with the SWR tie off the ends of each dipole by folding any excess wire back onto itself. Refer Photo 3.

There is usually a good supply of used ceramic and plastic insulators (refer Photo 1) available at hamfests but living in the country I have an inexhaustible supply of electric fence insulators (refer Photo 2) available at the local stock and station agent.

Insulators can also be made out of a scrap piece of PVC conduit cut to length (refer Photo 3) and two sets of holes drilled at each end. Conduit in various sizes can be obtained from most hardware or electrical suppliers.

This is a really useful antenna for portable field day and emergency use (refer Photo 4) and can be stored in the boot of your car and erected from a near-by tree in a couple of minutes. The half wave dipole will out-perform any mobile vertical antenna.

Do not forget, if you have something suitable to publish, feel free to submit it direct to the Editor or to me, and I can collate the material for inclusion in the column.

That is it for this month, next time we will construct a simple choke feed with a centre support for your newly made dipoles.

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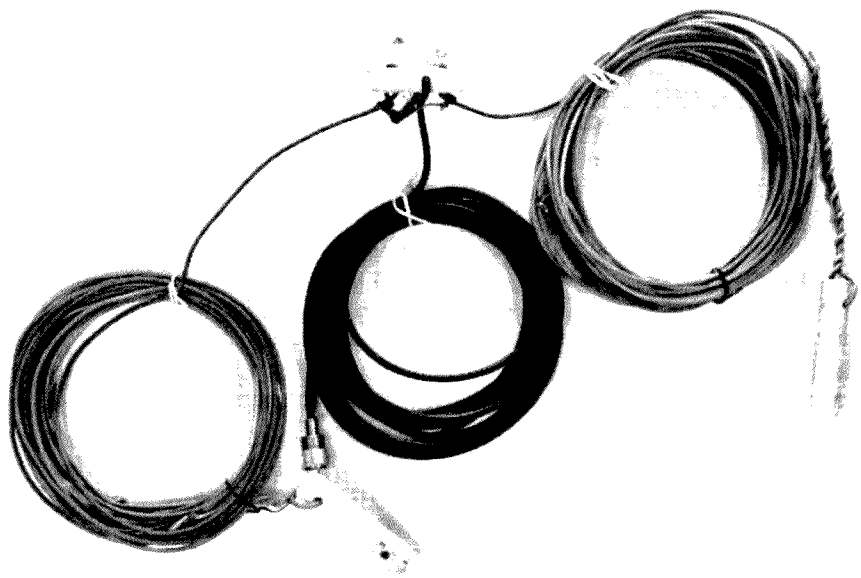


Photo 4: The portable 40 m dipole using homemade PVC insulators.

TET-EMTRON

Antenna Manufacturers

New Tet-Emtron Vertical Range

- All Aluminium with Stainless steel hardware.
- No adjustment needed to main antenna.
- Light.
- Free standing—no intrusive guy wires.
- 1 kW PEP power rating.
- Can be ground mounted or elevated.

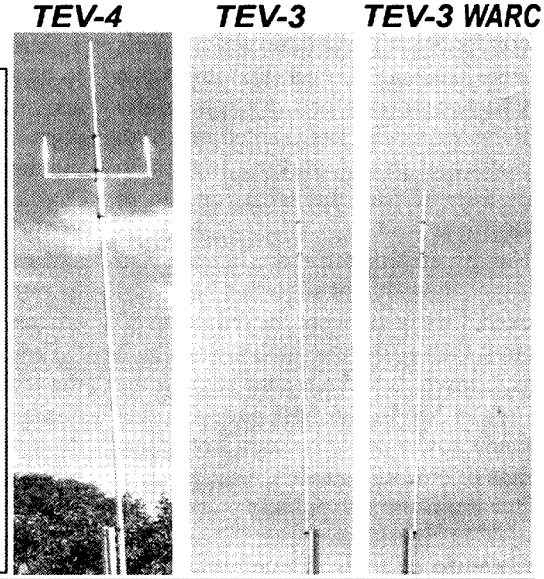
The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

New

Tet-Emtron Vertical Range

TEV-4 TEV-3 TEV-3 WARC



Antenna	TEV-4	TEV-3	TEV-3 WARC
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

40 Blackburn Street
STRATFORD
Victoria 3862 AUSTRALIA

Ph: 61 3 5145 6179
Fax: 61 3 5145 6821
ABN: 87404541761

www.tet-emtron.com
Email: rawmar@hotkey.net.au

"A ghost town called eighty": Mentoring on air may just be the answer

Michael J. Charteris VK4QS

One of the best things about hindsight is the opportunity to consider how we might have done things a little differently in the past. Thus to avail ourselves of opportunity in the present is to look forward to where we want to be at sometime in the future.

I will start this article by stepping back in time some twenty-six years ago to 1983, when I was first introduced to amateur radio. I had previously been an avid SSB DXer on 27 MHz, with contacts to most parts of the world, and I loved it.

My adventures above the legal frequency allocation saw me land in hot water with the Department, resulting in a visit from the "MAN" for a quiet chat. With renewed clarity I decided to study for the Novice Operators Certificate of Proficiency.

I was assisted in this daunting task by Mr. Stan Graves (SK), a retired electronics engineer, full call, gentleman and mentor. Months of hard study followed on subjects I had never heard of before. But I knew I had to grasp them to join the respected ranks of amateur radio. Finally in May 1983, after nearly six weeks of anticipation, a letter arrived to advise me that I had successfully passed both the Theory and Regulations, and was now permitted by the government to commence amateur radio activity. This changed my life forever, and up to this day I am so grateful for every opportunity that amateur radio has granted me, both socially and in my working life. I can only hope it does the same for you in your life as well.

Having an amateur radio licence also changed the way our suburban backyard looked. Firstly, up went the dipole on 80 metres, then a 20 metre high tower which was followed by a 5 element Yagi for the 15 metre band. The best part was that my new tower could be seen from most points of our little suburb.

It was now time to put into practice the few skills I had learned over the previous six months of study. I knew no-one on the amateur bands, apart from the local hams in Maryborough, who were always willing to offer advice and a friendly chat on related subjects. I can say though, that I did not feel as if I had joined a society of strangers; I never felt cut adrift to wander the bands alone and unassisted. Rather I was embraced by a new family, guided with their advice, and nurtured with good humour and operating skills.

The place where most, if not all, this activity occurred was on the busy, but very communal 80 metre band. Each night as the stars came out, the band would literally fill with the buzz and hiss of stations from all over Australia chatting in pairs, or in groups as part of a net.

The thing that struck you was that no matter how busy it was, it was still a very orderly radio society. There was no vindictive sarcasm or name calling, no button pushing, carrier dropping, music playing or any of the bad behaviour that has penetrated our bands today. As one would expect there was rather a healthy respect for the fact that the amateur radio licence, once achieved, was in fact a privilege, not a right to be abused.

The thing that struck you was that no matter how busy it was, it was still a very orderly radio society.

Sure there were issues to be resolved when I first arrived on the bands as well, but results were achieved in a far more gentlemanly manner than outright abuse. These days if you can't get your own way and the verdict does not suit you, just revert to swearing, an age old cure for everything, or pursue the other station with abuse wherever he goes.

From memory when I first started, the majority of the conversations being conducted were of a technical nature to do with amateur radio. Depending on who you listened to, you could learn about antennas, catch up on the latest DX workings on the bands, or who was restoring a piece of WW2 equipment.

Subjects such as the progress of someone's latest receiver or transmitter project were always good value. I now knew I had come to the right place to soak up as much knowledge as I could from other experienced operators. Best of all this knowledge was freely available no matter if you were a novice or full call. All you had to do was ask, and sure enough an experienced amateur would take the time to speak to you, and answer your questions as best he could. This was the pathway to enlightenment, the sharing of knowledge by way a medium known as radio fellowship.

Another phenomenon that I well remember was the "Holding of Court" by a two letter full call of great experience. This would see a group of novice operators in deep conversation with the full call on many and varied subjects.The goal was the understanding of concepts that the novices had read about but did not quite grasp. The full call was an obliging chap, who would guide each novice through the ins and outs of his query. Thus the novice operator would come away with a greater understanding of that which had perplexed him.

The best part was that every other novice in the group benefited, as well as all those who were listening on frequency. I should probably mention that when I first got my licence, I was a little apprehensive to actually join some of these groups as "full calls" were almost like Gods. They seemed to know everything one ever needed to know from antennas to building your own station. They embodied a wealth of knowledge, freely available to anyone willing to ask for it politely. One of the greatest benefits of all this was the friendly banter that saw amateurs from different parts of the country who had never met each other before, become the best of friends.

A lot of full calls that I did eventually speak to, were in fact retired gentlemen, engineers, or technicians, plus those who were just as keen as myself to learn what there was to learn. A greater number of them had served in World War

II, had been licensed in the 1930s and had generally been there and done that. Such operators had near on fifty years of experience in many technical fields as well as in amateur radio. Sadly today as we move forward into the 21st century their valuable numbers dwindle by the day as these men approach the eighty to ninety year bracket. A generation of history and experience is quickly fading from the picture of our great hobby.

The question for every current ham is who will fill this void. More to the point, what will our future generation of radio operators be like? How can we learn from the past to assist these new operators with good operating skills and a desire to pursue excellence?

One of the most blatantly obvious examples of an ever dwindling active population of amateur radio operators is the state of the eighty metre band most any night of the week.

The silence is deafening my friends, absolute white noise, hiss and crash, void of both voice and Morse. Yes, and I do have a very good antenna for the band; a one wavelength full wave loop. My pleading question is where are all the full calls, where are all the technical conversations, where are the little groups of learning, and where are we headed.

In these times of low sunspot numbers the DXing is a little hit and miss on our bands. But good old 80 metres is like a faithful friend. It is up and ready to go when the stars come out most every evening with the promise of working all states in Australia if not New Zealand. The 80 metre band represents the heart of local nightly HF amateur radio activity in Australia. And from what I have heard over the past couple of years, the band is flat lining.

The 80 metre band, where once the population thrived when the sun went down, is very close to becoming a ghost town of past call signs that filled this band with expectation of better things to come. It was a nursery for those striving to advance their knowledge, to learn what was required to pass the next level in amateur radio.

It seems that once the weekly 80 metre nets are finished everyone is on the last train out of Dodge City and that is it for the night. This is probably highlighted by our very busy lives these days. Not to mention the influence of the internet, computers and television. We are, though, very fortunate to have the 'Foundation' licence as an opportunity for motivated members of the public to undertake study to become a foundation level licensee, to see if amateur radio is for them as a hobby. This is their chance to dip their toes in the water. It is purely my own opinion that one of the best ways we can help these new operators is to encourage them to activate the eighty metre band nightly. We all need to make an effort to get up on 80 metres and to communicate with as many "F" Calls and Standards as we can. We need to create, as of old, groups of technical discussion, be it about antennas, crystal sets or simple transistor/chip sets as construction projects. At the Ipswich and District Radio Club we have set aside a night of technical development for any members of the club. Thus far about five of our Foundation licensees have completed their crystal set project and are now moving on to a FET receiver. At first, they thought the crystal set too simple a project, until I asked them to explain to me electrically how it actually worked... Now they know how it works because they have built one, and it has been explained to them electrically.

Radio mentoring nets

One possible solution to our dilemma, if supported by clubs, groups and individual operators, would see the formation of radio mentoring nets to conduct on-air training. It could be as simple as individual operators calling "CQ mentor net", and being willing to answer questions from a check-in list of "F" calls or Standards. It will require operators who are prepared to give of their time in order to run such nets for the benefit of others. If everyone on such a net had, say, Fred Swainston's wonderful Amateur Radio Theory Handbook, then questions could be asked each week, after reading the chapters one by one as homework. The discussion by way of net control could explain the finer points to the net on hard to grasp concepts.

Perhaps you or your club could contact all the "F" Calls in your area, set a time, and see about them all purchasing Fred's great book. Get them to read the chapter for a week and then discuss it on air under the guidance of an advanced call "net controller". It may take more than a week to read the chapter, and more than a night to understand the concepts. But in the end, if we as a radio community undertake to give it a go, then the benefits will far outweigh the alternative of never having tried at all.

It needs to be stated that with the modern community we live in, the backyard is not what it used to be. Neighbours tend to frown at 'unsightly' antennas springing up to offend their view. Finally, I can only encourage you to the fullest to undertake the journey that amateur radio can take you on to change your life, your outlook and your future employment prospects. The Foundation licence for some will only ever be as far as they go. It still allows them to enjoy our great hobby just as much as other operators. For many others it can be the beginning of a new life, a chance to move forward to the Standard and then to the Advanced licence in time.

You never know, such a move could see you change your employment to work in the electrical industry. From my own experience, amateur radio has seen me work in the electronic retail industry, sail to most countries in Asia with the Royal Australian Navy, and these days, to work as a systems electrician in the Railways. This was all possible because some twenty-six years ago I studied for, and passed my amateur radio operator exams. I hope your journey is as interesting as mine has been thus far, and I look forward to speaking with you on air some time in the future.

At the time of writing, the VK Trans Tasman 80 metre contest has just been held. I was most impressed with the number of participants. It was heartening to hear 80 metres jam packed with operators, just like when I first kicked off on amateur radio in the 1980s. Yes it was crowded, yes it was difficult at times, and yes I am sure a lot of operators came out of the woodwork to have a crack, but boy oh boy it was great fun. Of particular note, was the number of Foundation calls banging away successfully making plenty of contacts. Maybe we need a couple more local VK/ZL contests to stimulate such wonderful activity as was enjoyed by all this past May 9 2009.

Thus, as I began this article, let me finish it on the same note, that we are all responsible for the future of amateur radio in this country. Let us not see the chance slip by to rekindle the fire that once it was. But rather grasp the opportunity to impart our skills and knowledge to others by way of good example, radio mentor nets, club activities and generally by good operating 'on air'.

ar

News From

VK5

Adelaide Hills Amateur Radio Society

David Clegg VK5KC and John Elliott VK5EMI



One of the repeaters installed in the Gammon Ranges by Hank and his party.



July ETSA Museum Visit. Part of the group inspecting a very serious circuit-breaker.

(ETSA is the Electricity Trust of South Australia).

Our regular contributor, Christine VK5CTY, is far away in Svalbard. The SYLRA (the Scandinavian equivalent of ALARA) is hosting a DXpedition to that remote island, and Christine, a keen and active ALARA member, is no doubt having a wonderful time with her overseas counterparts.

Dr Hank Prunckun VK5JAZ spoke at the August meeting of AHARS, outlining his involvement with 'Operation Flinders'. This is a project where 'at risk' young people spend eight days walking 100 km in the bush around Angepena Station, near Leigh Creek. Hank was instrumental in setting up a VHF and UHF repeater network to provide safety and tracking coverage for the groups. A radio link back to Leigh Creek was also included in case emergency medical help was needed. Thank you, Hank for your most interesting presentation. After the business meeting and supper a mini auction was held, with proceeds going to the club.

September 12th was the local VK5 Clubs' Conference, with good support from AHARS. WIA National President Michael Owen was present to discuss national issues with us. September 13th was the club annual Hamfest and Buy and Sell event. Expect a full report next month.

The September meeting speaker is Tony VK5KAT. Tony will talk on designing a broadcast service starting from the desired signal strength back to the transmitter.

November is the traditional Construction Night. Graham Dicker VK5ZFZ is putting together a kit for a two tone oscillator, built on a commercially made PCB. These construction nights are very popular with members.

Correction to photo caption: The correct identity of the gent in the background of the top photo in the August 2009 AR is Greg VK5ZBD. **ar**

Radio Amateurs Old Timers Club of SA

The

Annual Luncheon

will be held on

Thursday 22 October 2009

12 noon for 12:30 lunch. Please bring your Seniors Card.

Venue:

Marion Hotel

Marion Road, Mitchell Park

Public transport Bus M44, Stop 24.

RSVP to one of the following committee members before 20 October 2009:

Secretary: Ray Deane VK5RK Phone: 8271 5401

Assistant Secretary: Ron Coat VK5RV Phone 8296 6681

Ray Deane, Honorary Secretary

Power generation 1919 versus 2009

Peter Wolfenden VK3RV

An inspection of PowerWorks and one of the Loy Yang power stations was included as part of the activities associated with the recent WIA AGM/GippsTech weekend.

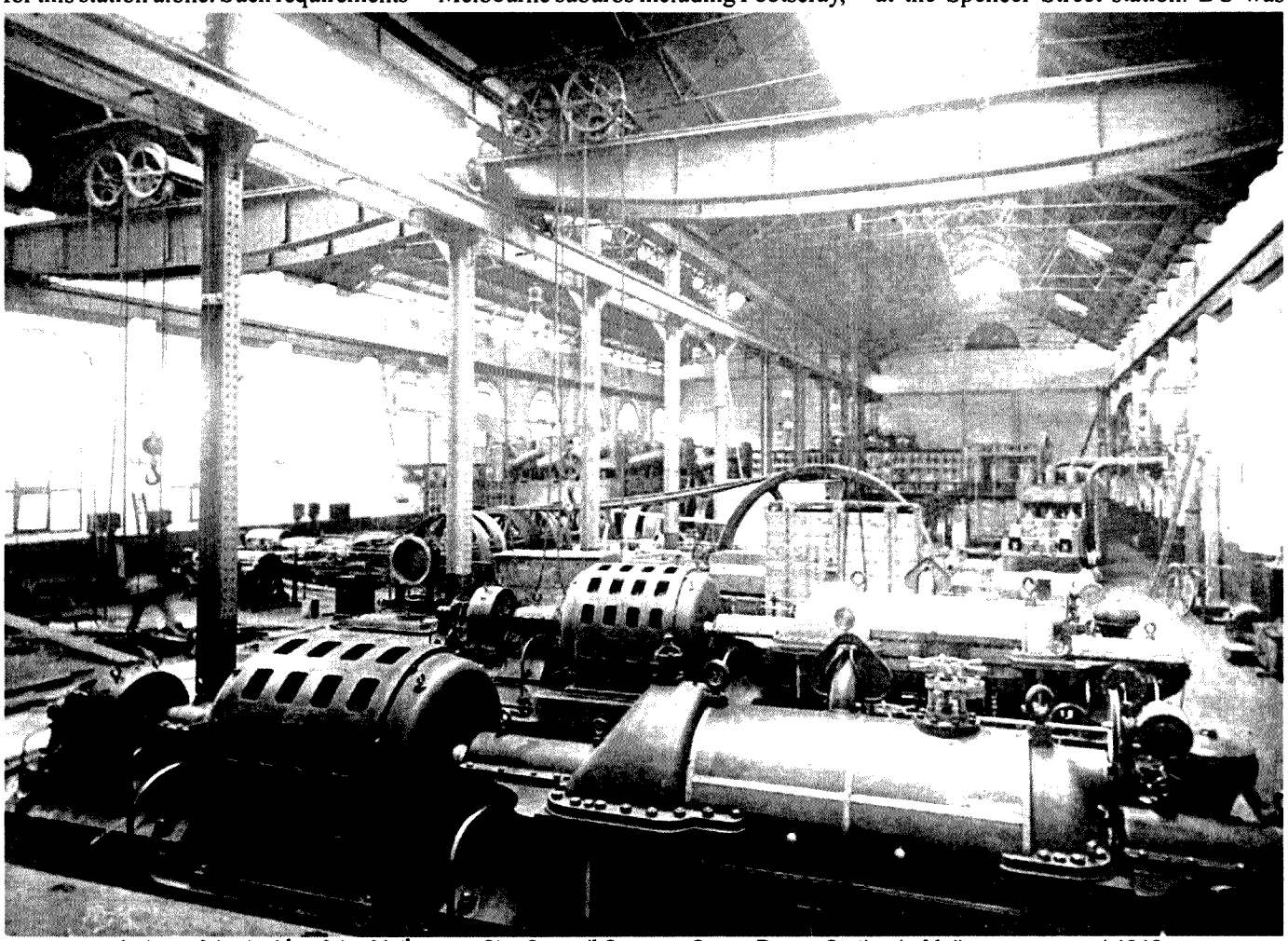
The Loy Yang A station is one of a number located in the brown coal basin of the Latrobe Valley and generates about one third of Victoria's power requirements. All of the generators in the area contribute about 85% of the State's requirements.

The station we inspected has four 500 megawatt turbo alternators now upgraded and capable of supplying a total of 2100 megawatts. To generate this amount of power requires about 60,000 tonnes of brown coal each day for this station alone. Such requirements means that everything is BIG especially the bucket-wheel dredgers which are some 190 metres long and 50 metres high, totally dwarfing any dump trucks near them!

Contrast this with an inspection carried out almost 100 years ago by members of the Amateur Radio Society of Victoria when they visited the power station operated by the Melbourne City Council in Spencer Street.

This installation generated electricity for the central city and nearby inner Melbourne suburbs including Footscray, Port Melbourne and Brunswick. These and other inner Melbourne areas were bulk supplied by the Melbourne City Council until the State Electricity Commission of Victoria came into existence and was in a position to take over supply.

It is also of interest to note that the City Electrical Engineer, Mr H.R. Harper, resigned and was appointed Chief Electrical Engineer for the S.E.C.V. in 1919. Both direct current and alternating current were generated at the Spencer Street station. DC was



A view of the inside of the Melbourne City Council Spencer Street Power Station in Melbourne, around 1910. Photo from the author's collection.

Ed. Note: The station, since 1982 an asbestos and PCB ridden derelict eyesore, is currently being very carefully demolished.

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Tri band HB 35 C 10/15/20 m	$844
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Log periodic 7 ele 13-30, 6.5 m boom	$813
NEW 160 m Vertical SUBURBAN	$355
M B Vert auto switch 10/80 m	$345
40 m linear loaded 2 ele 6.4 boom	$574
5 ele 20 m beam 40 foot boom	$995
6 m 8 ele 12 dB gain	$408
Top loaded 160 m vert	$474
NEW 2 m/70 cm/10/17 elements Yagi beam antenna N-CON	$261

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used in the central city area for a number of reasons including the minimisation of interference to the telegraph and telephone system!

At the time the Society members visited, the station was made up of a total of 5.1 MW direct current dynamos or generators and 4.6 MW alternating current machines. A newly installed 2.5 MW three phase turbo alternator was probably in the commissioning stage and would have been of great interest because of its size!

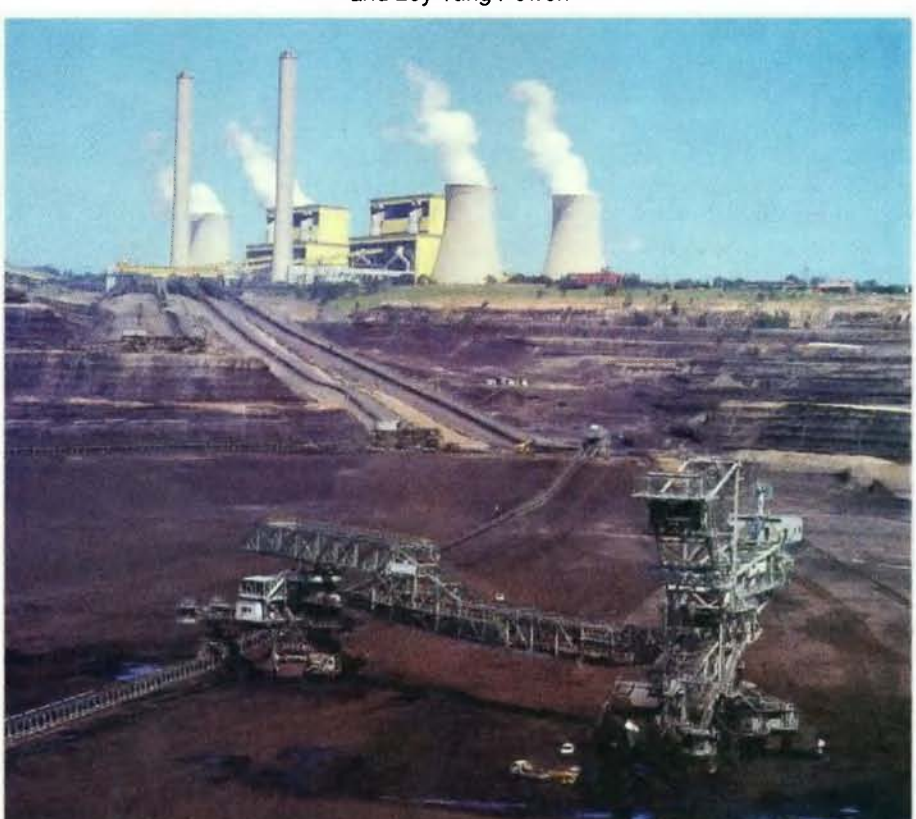
References:

Loy Yang Power brochures.
Amateur Radio Society/ Wireless Institute of Victoria minute book 1911-1915. WIA Archive.
History of Electricity in Melbourne, Melbourne City Council.

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One of the generator halls at Loy Yang A power station. Photo courtesy of PowerWorks and Loy Yang Power.



A view of one of the dredgers in the Loy Yang open cut mine, with the station in the background.The vehicles in the forground provide an indication of size. Photo courtesy of PowerWorks and Loy Yang Power.

My G5RV dedicated coupler unit for 80 / 40 / 20 metres

Wayne Pickard VK2ACY

To my knowledge (despite the reams and terabytes already expended on discussion / argument / tutorial about the G5RV), nobody has ever designed a dedicated coupling unit just for this often misunderstood antenna. After exhaustively confirming absolutely no difference between my G5RV and (full-sized half wave centre and end fed) dipoles on 80 and 40 metres at my QTH, the decision to retain my G5RV as the primary antenna for these bands prompted my designing such a unit with fixed settings, providing replicable SWR readings (without even the need for me to check each time used).

My prototype used all second-hand parts, namely one HF toroidal balun core, 6 metres of 0.63 or 0.71 mm enamelled winding wire, 205 mm (8 in) of 19 mm (3/4 in) diameter wooden dowel rod, 300 mm (12 in) of hookup wire, 150 mm (6 in) of thin tinned wire, three small alligator clips – white, black and green, 2 only 680 pf 250 V ceramic / styroseal or similar capacitors, one SO-239 socket, two insulated banana terminal / binding posts, four small brad tacking nails, and two small self tapping screws.

All housed in an old MacKintosh's 'Quality Street' ®™ candy tin with a handy swing lid, approximately 205 mm wide x 125 mm deep x 58 mm high.

Photos 1 and 2 show what I did and this is the order in which I did it:

Mounted the SO-239 socket in the middle of the rear panel of the 'toffee tin' and then mounted each of the insulated banana terminals / binding posts either side of it.

Cut two 610 mm (2 ft) pieces of the enamelled winding wire, and wound 10 turns of each parallel to each other (that is, side by side) tightly around the balun core, ensuring each of the pairs of turns tightly follows the outside / inside surface of the 'doughnut'.

I spaced the windings about 2.5 mm apart, ensuring that the 10 (pairs of) turns covered about three quarters of the doughnut's entire circumference.

Left about 50 mm (2 in) of winding wire at each end of the windings before cutting off the excess. Identified the 'start' and 'end' of one winding (primary winding), trimmed these close to the required length, and (using



Photo 1: The Mackintosh's 'Quality Street' ®™ candy tin coupler unit for the G5RV

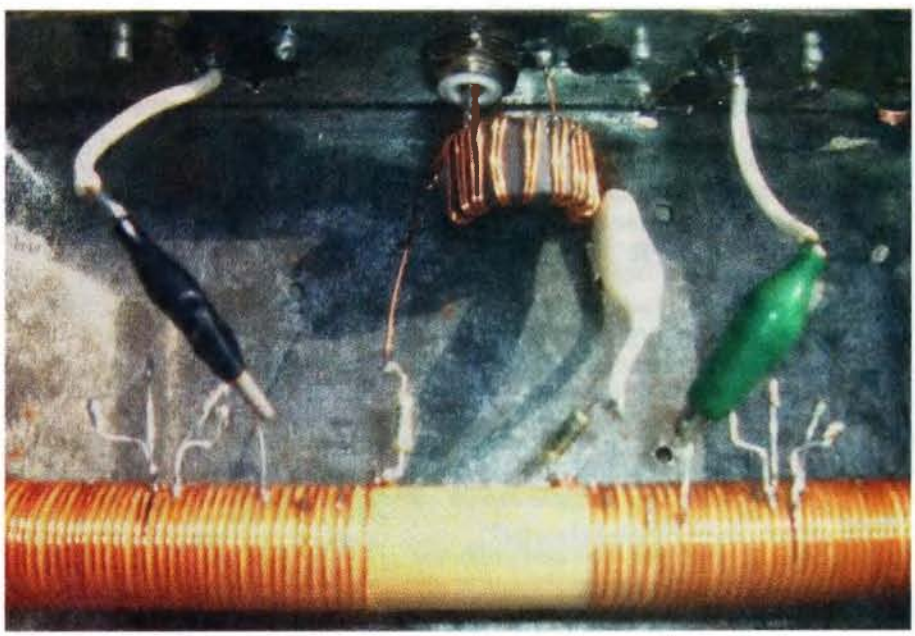


Photo 2: A look inside the 'candy tin' coupler, on 40 metres

a sharp knife) scraped enough enamel off the wire to permit tinning with solder and soldering directly to the SO-239 connections (the 'start' of the primary winding soldered to the centre pin, and the 'end' of the same winding soldered to the chassis / shield lug.)

Similarly scraped and solder-tinned the 'start' of the other winding (secondary winding) leaving it ready for soldering later as required. Also scraped and solder-tinned the 'end' of the secondary winding leaving only enough wire so that folded once over on itself it will form a 0.5 cm 'tab' which a crocodile clip could manage to grip firmly onto.

This 'end of winding' tab will form one balun connection which is selected by moving the appropriate 'crocodile clip' when using the antenna on the 40 and 20 metre bands. I labelled this connection to the balun 'Full winding tap for 40 and 20 m.'

Counting four whole turns back from this 0.5 cm 'end of winding' tab, a small area of enamel is scraped off the top of the same wire which forms the secondary winding to enable solder-tinning and a small one cm tab of wire to be also soldered on at that point.

This one cm tab will similarly form another balun connection which is selected by moving the appropriate 'crocodile clip' when using the antenna on the 80 metre band. I labelled this connection to the balun 'Half winding tap for 80 m.'

Turning my attention to winding the required 7 uH tapped inductors, I hammered two nails into the dowel rod, each 13 mm (1/2 in) either side of the exact middle of its 205 mm (8 in) length, leaving only about 3 mm or so of the top of each nail exposed.

I then hammered one of the remaining nails exactly 63 mm (2 1/2 in) further out towards the left-hand end of the dowel rod, from the left-hand nail. Then I similarly hammered the last remaining nail exactly 63 mm (2½ in) further out towards the right-hand end of the dowel rod, from the right-hand nail. I found that these nails formed convenient anchoring posts for the enamelled wire about to be wound onto the dowel rod.

I then cut a two metre length of enamelled wire and scraped 25 mm (1 in) or so of enamel off one end to permit anchoring by wrapping twice around the left-hand nail closest to the centre of the dowel rod. After tinning / soldering it in place,

I then proceeded to tightly wind the wire around the dowel at a pitch of 15 turns per 25.4 mm (1 in), for a total of 37 turns, arriving just near the outer left-hand anchoring nail.

I temporarily held the end of the winding in place with tape while I cut the wire (leaving 25 mm (1 in) for scraping / tinning, anchor-wrapping and soldering around the nail itself.)

Once this was done I proceeded to repeat the exercise for the inductor to be wound on the right-hand side of the dowel rod, winding carefully and making sure that the direction of the winding was the same (that is, not counter-clockwise with respect to) the first winding I had made.

These two identical inductors would eventually be 'crocodile clipped' in series with each leg of my G5RV feedline, depending on the frequency band in use.

Counting from the very centre of the dowel rod (where the 'starts' of each inductor's windings are located) I carefully marked with Texta, at the 8, 17, 18, 19 and 20 turn points on each inductor, and proceeded to scrape a small area of enamel off the wire at each point to permit solder-tinning and attaching a small connection 'tab'

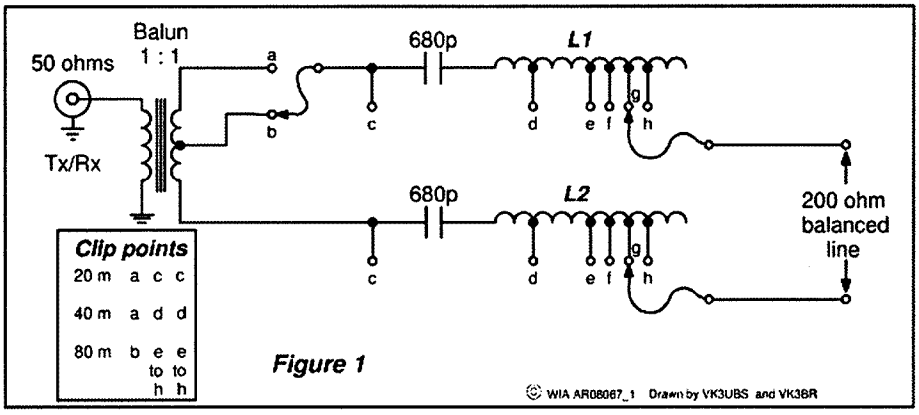


Figure 1: The circuit of the 'candy tin' coupler

So how exactly does my G5RV dedicated coupler actually work?

Very simply in fact – so much so that I did not feel the need to draw a circuit diagram for the completed unit; I could have built another one in the same amount of time!

The connection from the SO-239 socket is fed directly to the primary winding of the balun transformer. The balun performs the necessary 'balancing' in order to run the G5RV as a true balanced doublet, and also performs the necessary step-down impedance transformation when the 'Half winding' tap is selected during use on 80 metres.

From there, the two balanced balun connections each feed through a coupling capacitor and then an inductor winding on their way to the antenna feedline connections.

As the Q factor of the inductors is a medium-range figure on 80 metres, the useable bandwidth is limited to about 60 kHz, so a number of taps are provided, at 20, 19, 18 and 17 turns to reduce the inductance as higher frequencies in the band are used. The use of larger diameter inductors, say 100 mm (4 in) diameter would have negated this requirement, but made for a somewhat cumbersome sized unit to say the least; not to mention greatly increased cost.

On 40 metres the G5RV is a very broadband antenna, so the one set of inductor taps, at eight turns, more than satisfactorily provides a suitable match without the need to change, as higher frequencies are used further up the band.

On 20 metres the capacitors and inductors are by-passed and the balanced feedline connections simply 'clipped' onto the output connections from the balun operating in 1:1 mode. Measured SWR right across the whole 20 metre band was under 1.5 to 1 when operating the G5RV in this true balanced mode (as the reactive coax inductance does not come into play as it did prior to my using this unit).

(using very short pieces of the thin tinned wire doubled over) to which a crocodile clip could grip firmly onto.

At this point I breathed a sigh of relief because I knew that the unit was *just about finished,* and proceeded to mount the dowel rod on which I wound the inductors by screwing the two small self-tapping screws through the sides of the tin case and firmly into the ends of the dowel rod to prevent it spinning or moving.

The rod was aligned so that the nail heads and inductor taps were all facing the rear of the unit.

I then cut a short 50 mm (2 in) piece of insulated hookup wire and soldered one end to the inside of the insulated banana terminal / binding post on the left hand side of the rear panel, and the other end to the black crocodile clip. This could then be clipped to the appropriate winding 'tap' on the inductor closest to it, for the band in use.

Similarly, another short 50 mm (2 in) piece of insulated hookup wire was soldered to the insulated banana terminal / binding post on the right-hand side of the rear panel, and the green crocodile clip fitted to the far end, eventually allowing connection to the appropriate inductor taps closest to it.

Almost finally – taking one of the 680 pf capacitors, one lead of which was soldered to the left-hand inductor's 'start' of winding connection (at the central anchor nail), the other lead of the capacitor was then soldered to the balun's secondary winding 'start' connection (as mentioned above).

The other 680 pf capacitor was similarly soldered to the right-hand inductor's 'start' of winding connection (at the central anchor nail). A short 25 mm (1 in) length of insulated hookup wire with the white crocodile clip soldered to the far end was then soldered to the capacitor's other lead. This could then be clipped to the appropriate 'Full Winding' or 'Half Winding' balun connection required for the frequency in use.

Finally, after extensive testing including SWR measurements and on-air comparisons, I was able to sit down and make the following chart to remind me of the 'crocodile clip' settings for each band of interest:

80 metre band: White crocodile clip connected to 'Half winding' tap on balun transformer.

- Black and green crocodile clips connected to respective inductor taps as per the following centre frequencies:
- 3.550 MHz, use both taps at 20 turns.
- 3.580 MHz, use both taps at 19 turns.
- 3.610 MHz, use both taps at 18 turns.
- 3.640 MHz, use both taps at 17 turns.
- Higher centre frequencies are available by tapping appropriately at the ascending rate of 30 kHz per turn. The worst case measured SWR was 1.5:1 in between adjacent turn/taps.

40 metre band: White crocodile clip connected to 'Full winding' tap on balun transformer.

Black and green crocodile clips connected to respective inductor taps at the 8 turns position, which covers the whole of the 40 metre band.

20 metre band: White crocodile clip connected to 'Full winding' tap on balun transformer.

Black and green crocodile clips are NOT connected to inductor taps, but rather (on 20 metres only) are each attached directly to the capacitor closest to them by clipping onto the capacitor's lead which is *not* soldered to the inductor rod.

So, there you have it. An afternoon's work and absolutely *no* financial outlay, resulted in an SWR of better than 1.4:1 across 80/40/20 and the knowledge that my G5RV is now operated as a true balanced doublet, with consistently up to 1 S point improvement, particularly on 80 metres.

PS: For the record, my G5RV was installed as a flat-top at a height of 7.6 metres (25 ft) and constructed with 15.5 metres (51 ft) of 1.25 mm enamelled wire per leg, fed with 8.5 metres (28 ft) of solid 300 ohm TV type ribbon feeder directly to the coupler situated on the ground, and 7.5 metres of RG-58 coax from there to the station's operating position. Estimated maximum power rating of the coupler built by me is thought to be around 200 watts PEP.

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Amateur Radio Specialist

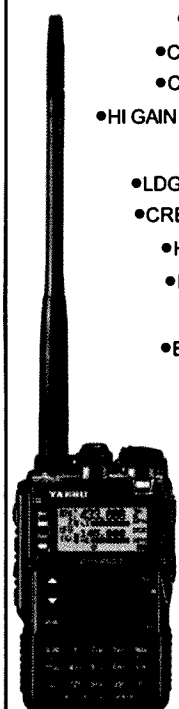
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News from



Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

Greetings everyone,

TARC

Townsville IRLP Node 6444 is operational again after having a few technical difficulties, so if you want to have a chat to the Townsville Amateur Radio club members and to see what they are up to, or even to let them know that you are willing to assist in one of their various activities, tune in and tell them.

Some of the upcoming events that will be occurring are with BLUE VK4FBLU.

October 10th and 11th Bluewater Endurance Ride: Operators so far assisting VK4s ZZ, UCM, FTVL, ZM, FBLU and HSV. Contact Blue on telephone 47754184 or the Townsville IRLP node 6444 with an offer for support.

WICEN Net

WICEN Queensland holds a net every Sunday on 7075 kHz from 0830 (2230 UTC). If conditions are poor, the net moves to 3600 kHz

TRG

So far 2009 has been an extremely busy year, "radio active", for the Tableland Radio Group (TRG) – based on the Atherton Tablelands and Innisfail of Far North Qld.

The TRG enjoys the challenge of operating portable plus the joys of camping and has had quite a few trips so far this year. Earlier in the year saw several members travel to John VK4FNQ's property for some days, then trips to Koomboolmba Dam, Laura, Innott Hot Springs and Cooktown. We have taken part in the John Moyle Memorial Field Day recently as the most northern Australian station operating for the International Lighthouse/Lightship Weekend – which we have done for the last five years. TREC have tried various antennas such as long wires, G5RV, inverted V, wire loops and mag loops, verticals and NVIS. Also have been multi band and multi mode on these trips.

Socialising is also important for the TRG and each morning members catch up via repeater VK4RBP for information on events, experiments and other news. And members regularly catch up for coffee mornings and visits to each others shacks.

TREC

Tablelands Radio and Electronic Club members provided communications support at the recent Far North Queensland Endurance Riders Association's "Pioneer Trek". A five day event conducted in chilly conditions and early 5 am start, TREC members conducted reliable communications during the daylight hours and spent the evenings with the warmth of an open camp fire. A time enjoyed by all, with good company.

Caboolture Radio Club

The Caboolture Radio Club would like to advise that their next AGM will be held on Saturday October 10, 2009 at 1100 AEST at the club house located at 169 Smiths Road Caboolture.

Plenty of off street parking and refreshments are available. They have been trialling a new repeater at Ocean View 146.625 MHz. Preliminary reports indicate coverage south to Boonah, west to Yarraman and north to Nambour, with most of Bribie Island a formality.

The repeater is EchoLink enabled (EchoLink node 314599) and there are plans to install Echo-IRLP on it in the future (IRLP node 6898). Club nets are held on Monday evenings at 1945 AEST 146.625 MHz and generally go for three rounds.

Caboolture Radio Club also holds an 80 m net on 3.610 MHz at 1830 AEST which also goes for three rounds, check ins from VK2, VK3, and VK5 are common – all welcome.

RADAR

Rockhampton and Districts Amateur radio Club assisted in communications on 29th August when the Central Queensland Motor Sporting Club held a car rally at Byfield State Forest area, north of Yeppoon near the Central Queensland coast.

Eight radio amateurs assisted with communications. They were Ray VK4HOT accompanied by his wife; Leon VK4KLL; John VK4AHB; Leigh VK4YLW; Don VK4BY; Clive VK4ACC; Jack VK4JRC and Alex VK4FAMJ.

Organisation was on a fairly casual basis with tasks allocated on the day. Jack VK4JRC and Clive VK4ACC managed start and finish of the first rally section, while Leigh VK4YLW and Ray VK4HOT managed the start and finish of the second rally section.

Various road blocks were handled by John VK4AHB and Leon VK4KLL. Alex VK4FAMJ and Corey Parker assisted Clive.

Don VK4BY handled rally base control. The day started at 11:00 am with a briefing and allocation of responsibilities. High visibility jackets were issued to all check point operators.

The first cars started at 2:00 pm, and the rally stages continued until 7 pm that evening. Some difficulties with glare from the setting sun and lingering dust

caused delays where messages had to be quickly relayed from the stage check points to the rally base.

After the rally a BBQ was held at Red Rock camping area. Many of the assisting amateurs attended and were thanked by the rally organisers for their assistance. It was a good fun day out for everyone concerned, and all got to play radio in a useful environment, with a good dose of rally cars thrown in.

Ipswich and District Amateur Radio Club

Ipswich and District Amateur Radio Club has a newly renovated clubhouse. The club has its 80 m net each Tuesday night at 8:00 pm AEST on 3.585 MHz +/- QRM. All are welcome to join, so call in and say hello to VK4WIP and members. All amateur radio operators in the Ipswich area, be they members of the Club or not, are most welcome to drop in and say hello at the Clubhouse.

Meetings are on the 2nd and 4th Monday of the month. They look forward to seeing you at Denmark Hill.

And with their AGM being completed for 2009 the results of seats are as follows:

President:
Mike Charteris VK4QS

Vice President:
Glen Woodrow VK4FARR

Treasurer:
John Edwards VK4IE

Secretary:
Darrin Last VK4FVRX

WICEN Co-ordinator:
John Edwards VK4IE

JOTA Co-ordinator:
Mike Charteris VK4QS

Station Manager:
Rob Bryce VK4HW

Public Relations Officer:
Paul Weir VK4FPDW

QSL Manager/Librarian:
Simon Cantrell K4TSC

Contest Officer:
Paul Weir VK4FPDW

http://ipswichdistrictradioclub.webnode.com

Contact Mike VK4QS:empire1915@optusnet.com.au

SCARC

The Sunshine Coast Amateur Radio Club has been very busy recently. The club's antenna system has been revamped: in addition to the 20 m beam, we now have an all band vertical with a counterpoise with a remotely controlled antenna tuner, an inverted "V" also with a remote antenna tuner operating on all bands.

Most of the work has been carried out by Wayne VK4WS and Bill VK4WB with help from others at various times. Wayne VK4WS has also recently installed two new banks of deep cycle batteries with a solar panel charging system.

Warwick VK4NW and a band of helpers have installed a new 6 m antenna with more height giving an even larger coverage area than before, and are now in the process of relocating the spare 2 m repeater to a different site.

Leicester VK4ALH and Roy VK3GB activated the old Caloundra Lighthouse for the Lighthouse Weekend. Leicester had training as a Lighthouse Guide and gave tours to several visitors during the day.

A curious resident in a nearby apartment block enquired as to the purpose of the activity, and volunteered an anchoring point, the railings on her penthouse giving the double bazooka antenna considerable height, and judging by the pile ups that occurred they were putting out a tremendous signal.



Now that's a portable antenna fixing point!

Fastened to the seventh story Caloundra penthouse balcony rail, it put out a very good signal.

Not the least advantage was the means of getting to the fixing point. Taking an elevator and tying off is a lot easier than slingshots over tree branches etc.

While Leicester and Roy were at the Lighthouse, Wayne VK4WS was setting up at the clubhouse ready for the RD Contest, and led a contest team consisting of Wayne VK4WS, Richard VK4RY, Kirsty, Trevor VK4FGTS, and Ces VK4FMOZ.

The contest gave some F-call licensees a crash course in contesting and they rose to the task with enthusiasm and are now eagerly awaiting the next contest. The club's two new HF sets and the new antennas proved they were up to the task, performing well. Wayne ran the equipment for the entire contest on the new battery set up and it all worked well.

Richard VK4RY attended the Lighthouse with Leicester and Roy for several hours before the start of the RD Contest and was found asleep in his car early in the morning, much to the amusement of club members attending the clubhouse for the third Sunday of the Month BBQ meeting.

The Wednesday meetings have been busy of late: the library is being revamped and all the periodicals have been sorted and catalogued under the guidance of David VK4JMR; the surplus books and magazines are packed and stacked with the rest of the clubs surplus equipment ready for Sunfest, our annual fundraiser: Hope to see some of you there.

Late News

RADAR (Rockhampton) Annual Dinner Friday 20th November, 2009

BARC (Bundaberg) Annual Break-Up Friday 27th November, 2009

Many thanks to those who sent articles in for this edition, I am sorry that not all were published, but it will be submitted in the following issue.

Until next time

Cheers, **ar**

IPSWICH REPORT IS ON PAGE 38

Jamboree On The Air (JOTA)

Bob BristowVK6POP

JOTA is a large Scout and Guide event that occurs every year on the third full weekend in October. 2009 is the 52nd JOTA. Around half a million Scouts and Guides participate in this event, along with Jamboree On The Internet (JOTI) on the same weekend.

There is an increasing number of Scout youth members gaining their Foundation amateur radio licence, and they will be keen to talk on air.

JOTA this year is on the weekend 16-17-18 October, beginning and ending at midnight local time Friday and Sunday respectively.

The success of JOTA is largely due to the voluntary contribution of time, expertise and equipment by amateur operators. It is your input that helps to make this event a success. Without your help, it would be Jamboree OFF the air.

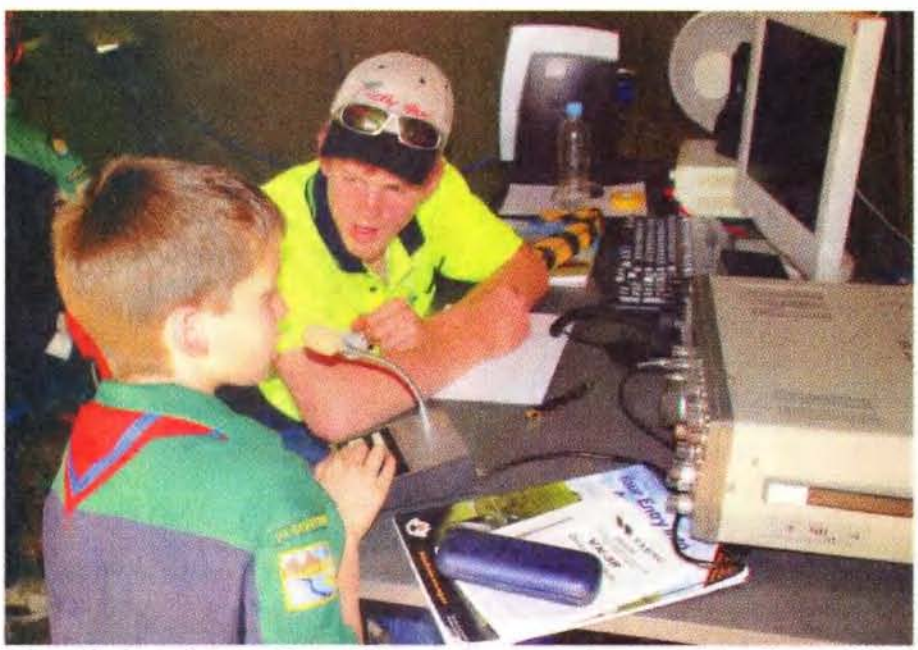
The following information is offered to help make JOTA successful:

- JOTA-JOTI is a Scout event, and the principal responsibility for the organisation and conduct of the event lies with Scout people. There is, however, nothing wrong with an amateur causing a Scout Group to become involved by offering to assist.
- It makes your task as the amateur on board easier if you take one or more licensed helpers.
- The Scout Group should provide the venue, organise and manage youth members, keep the coffee flowing and keep you fed and comfortable.
- Scout Leaders should have alternative activities on hand to occupy Scouts when they aren't engaged with the radios.
- If you need help putting up antennas and so on, don't hesitate to ask the Scout Leader for help. He may not want to be seen as interfering, so do ask for help.
- Be clear about the amount of time you are able to give.

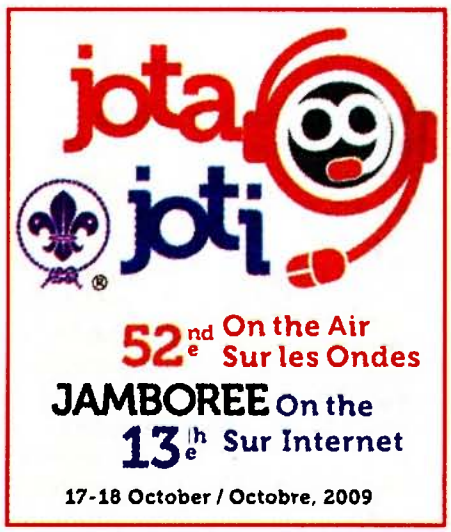
Those are general guidelines, and there are other things to think about, however these can all be sorted with some dialogue before and during the event.

You can find information at www.scouts.com.au Select the 'International' menu item.

I wish you well in your JOTA experience in 2009, and you can rest assured that the young people will benefit from the weekend.



Scout Matthew, from 1st Cavendish, getting some air time under the guidance of Nat VK3NAT



JOTA Calling frequencies

Please QSY off the calling frequency after establishing communication.

World CW calling frequencies (MHz):
3.570, 7.030, 14.060, 18.080, 21.140, 24.910, 28.180, 50.160

World voice calling frequencies (MHz): (Updated from 1 July 2007)
3.690 and 3.940, 7.090 and 7.190, 14.290, 18.140, 21.360, 24.960, 28.390, 50.160

Australian voice calling frequencies (MHz):
3.650, 7.090, 14.190, 21.190, 28.590, 52.160

Calling frequencies for Slow Scan TV (SSTV) (MHz):
3.630, 7.033, 14.227

Calling Frequencies for PSK31 (MHz): 14.070

Yaesu VX-8R

Greg Williams VK3VT and
Ian Slack VK3FFLY

Yaesu have packed plenty of features into this 95 mm high, 60 mm wide and 24.2 mm deep package.

This is a triple band transceiver coving the 50, 144 and 430 MHz bands with general coverage receiver from 0.5 MHz to 999.99 MHz AM, FM and WFM. One feature that is obvious from the advertising is that this unit is waterproof (one metre for 30 minutes) and extremely rugged construction is employed, making it ideal for all sorts of outdoor work. The transmitter provides four power settings from 0.05 W to 5 W with the provided 7.4 V 1100 mAh lithium ion battery in FM mode; it also runs 1 W AM on the 50 MHz Band.

When this rig first arrived I did what most of us do, screwed the antenna onto the SMA connector and turned it on. That is when I became stumped; what I thought was the dial knob used to tune the rig to a frequency was behaving as a volume control. After some frustration I decided it was time to read the manual; sure enough by pressing the 'F' key followed by the 'VOL' key the dial knob reverted to the normal function of tuning. There are 26 controls, comprising 25 buttons and the one dial knob, on this rig and from my experience it does pay to read the manual – all 172 pages of it! The supplied antenna comes in two parts with the small extension piece required for 50 MHz operation.

There are two independent receivers in the VX-8R and they both cover the three amateur bands. This means that you can receive on two bands, or two frequencies on the same band, simultaneously, a feature that I found useful on a recent foxhunt; once to listen to the fox frequency and the car liaison frequency at the same time and the other to listen to the fox and car liaison frequencies. The display is reasonably large and displays both frequencies with the active transmit frequency shown in larger characters.

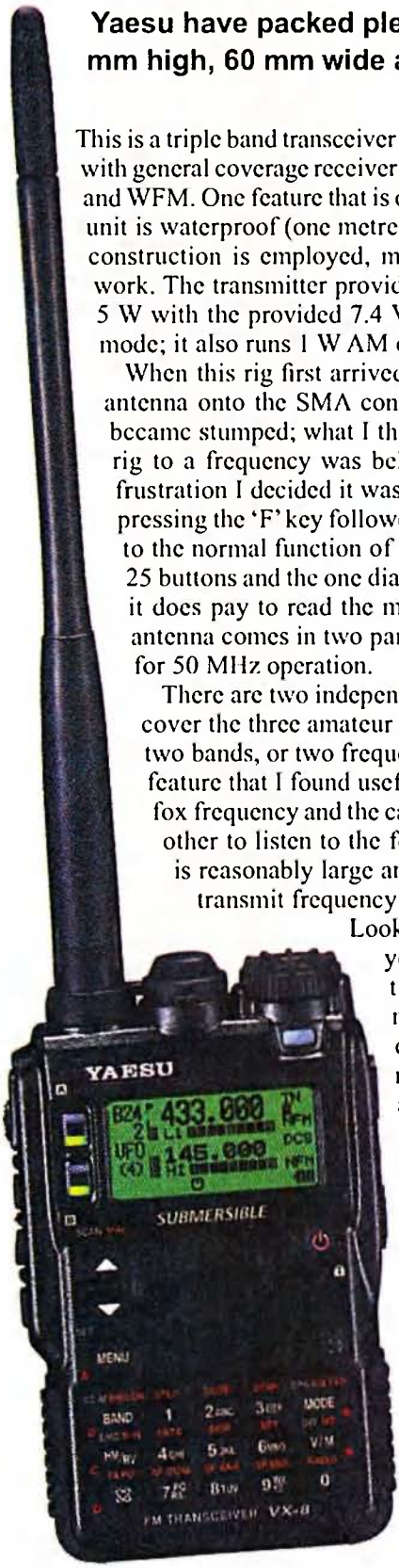
Looking at the menu system in the VX-8R makes you realise just how sophisticated handheld transceivers have become. There are 111 menu items that allow selection of almost every parameter and setting. These range from which antenna to use for AM and FM broadcast bands (there is an internal bar antenna for AM broadcast reception), adjusting the display contrast and brightness, tuning steps, squelch type and level through to CTCSS settings and units to display the temperature and barometric pressure from the internal sensors.

Another group of functions built into the VX-8R are aimed at APRS operation. To use these functions the optional GPS antenna that clips to the microphone or plugs into the microphone connector is required. These functions allow the unit to be set up to automatically send APRS beacon messages.

The unit also receives APRS messages.

Basic GPS functions are also provided indicating position, speed and direction of travel. Yaesu must believe that this will be a popular feature as the APRS menu is selected by a short press of the 'Menu' key. It took a bit of practice to access the normal menu items by holding the key for a little longer. The review unit did not have the GPS option so these functions were not tested.

In use the received audio from the VX-8R was clear and had plenty of volume available for noisy environments. Signal reports from stations worked indicated that the audio was crisp



The Yaesu VX-8R



The Yaesu VX-8R with GPS attachment.

and clear and the deviation was OK. I regularly use my handhelds on foxhunts and decided to try out the VX-8R on a regular Melbourne two metre monthly hunt; during the 'sniffing' part of a hunt I must have bumped a key and the radio was transmitting silent carrier for a couple of seconds followed by a beep before opening the transmit audio.

This is extremely frustrating for the rest of the team in the car and other users of the frequency and I finally found I had turned on the 'Internet Connection Feature' which is a single key press. A quick press of the key and the problem was gone. This is where menu item 51 – the Lock function should be used! It should be noted that this is an easy thing to do on a number of other radios.

Memories! This radio is loaded with memories, 900 standard and 99 skip memories, 11 'Home channels', 50 sets of band edge memories, one emergency channel, 57 VHF marine channels and 89 popular shortwave broadcast channels. Each channel can be given an alphanumeric name, probably a handy feature considering the number of them. The memories can be assigned to memory banks which can assist in organising them.

Scanning with the VX-8R has three modes – memory scan, scan a complete band or portions of a band. It can be programmed to stop for a selected time on a busy channel, stop on a busy channel until the channel is free and stop on busy and stay on the channel until the scan is resumed. Frequencies can be added to a skip memory so that scanning will not stop on them.

For those interested in learning Morse code, this facility is included. There are two modes, one to learn the characters and the other to improve speed; this sends five character groups at a selectable speed.

A basic form of text messaging is available on this and compatible Yaesu rigs – all members in the group have to have the same messages stored in the 20 message store and the same 20 stations in the member's list.

As I was conducting the review of the VX-8R and looking at all the features available I thought 'how would a newly licensed operator cope with a rig like this?' So I passed the rig over to Ian VK3FFLY who was recently licensed and had only operated a rig during the training and assessment sessions. So over to Ian for his comments:

I considered myself very fortunate to be asked to comment on the VX -8R as I have only very recently obtained my Foundation licence.

On opening the package my first impression was that the manual was very thick! I did however do the right thing and start by

Continued on facing page

SPOTLIGHT ON SWLing

Robin Harwood VK7RH

vk7rh@wia.org.au

October has arrived and also Daylight saving. NSW, Victoria, Tasmania and South Australia all commenced on the fourth of this month at 0200 Local Standard time. I am not sure if WA is still using it as I have a recollection that they had a referendum earlier this year and they may have decided to not have DST. Do not forget that many countries within the European Union and the former USSR revert back to Standard time on the 31st. Canada, the USA and Cuba change on 7th November.

I am sorry for unwittingly upsetting some readers in my column for August. I was voicing my comments on how fickle the media, both print and electronic, are when it comes to deciding what is important. It was not my intention to upset Michael Jackson fans about his tragic death. I was only commenting on the media perception of what is important and how they can quickly saturate the spectrum with what they consider is important. That is why I believe that there should be many voices and sources available to us, with a free dissemination of uncensored information, allowing us to form our own opinions and comments.

One of the first stations I heard on shortwave, when I started out in the late 50s, was HCJB, the "Voice of the Andes" in Quito, Ecuador, South America. It was easily heard on either 11915 or 9745 kHz in English, broadcasting to the South Pacific. It may have been the first report I sent off and it went by sea mail, their reply taking over a year. One of their regular programs was "DX Partyline" and the ANDEX club with Clayton Howard and I joined in the early 80s. My number was #3645.

HCJB started off on Christmas Day 1931 and continued for over six decades and sadly ceased shortwave broadcasts on 30th September. What brought about its closure was the rapid expansion of Quito's International Airport and Pifo, the site for HCJB's senders, had to be dismantled. Also the shortwave audience had fallen with the rise of local electronic media such as FM and the Internet. HCJB has helped with the start-up of over 300 local stations worldwide. These are often low-powered.

HCJB may have ceased broadcasting on shortwave from Pifo but their programming continues from the UK in Arabic and German and also from Australia. They now have three senders in Kununurra, WA, targeting SE Asia in Hindi, Indonesian, Japanese and various Chinese dialects as well as English. It is on between 0730 and 0200, mainly in the 19-metre allocation. It is silent between 0200 and 0730.

I notice that the last Chinese broadcasting station has now departed the segment between 7100 and 7200. The last holdout was a station in Nei Monghu in Inner Mongolia on 7105. It also had a spur 10 kHz either side. That leaves Pyongyang on 7140 between 0900 and 1250. There is a carrier on after North Korea leaves and I have heard very weak modulation. The location is Yakutsk in remote Siberia and is only a kilowatt. The program is identical to that on 7200, which is Radio Rossi.

Well that is all for now and hopefully I have not upset anybody this time!

Do not forget you can email me at vk7rh@wia.org.au

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reading this first. I did need to check whether the unit was OK for my licence conditions. Yep, power output OK and right bands.

The manual had a clear picture and explanation of all the principal features. However the next page was a spreadsheet detailing all secondary functions for each key; my eyes did glaze at this point. Fortunately the next few pages could be described as 'Getting Started' and I was off.

Assembly was easy and physically the unit was comfortable to hold even for my relatively small hands. The PTT button and VFO adjustment fell neatly to hand (fingers actually). I did find that I was unsure as to whether I had pressed some of the other buttons as the water resistant rubber covering gave me a loss of feel.

The display was both clear and very informative. Band selection was very simple as was frequency. The scanning function was great as I was able to find a couple of club nets that were active on the night and I had a great listen. Later contacts showed no problems with speaker and microphone.

Further reading of the manual revealed that there were 111 Menu items! It was not until I got to the 'Miscellaneous' section that I found a solution to one of my earlier concerns re button usage. I was able to increase Button Beep Volume and this gave me a positive indication of engagement. The more constant use of the menu button did highlight one confusing matter. A mishit, that is, too short, opened up the Auto Position Reporting System! A quick search of the manual got me out of there but still quite confusing!

I was not able to experiment much further as the unit needed to be returned.

My overall comments are that the unit would do everything that I would want but I feel I would probably not use most of the menu functions for some time."

Many thanks to Ian for his assistance, and to Peter Brennan from Vertex Standard for supplying the review radio. In summary the VX-8R is a very capable, rugged radio that would make an ideal addition to any ham shack.

The menu selection may take a little practice to navigate quickly but with regular use I am sure one could get very proficient at selecting the commonly used functions.

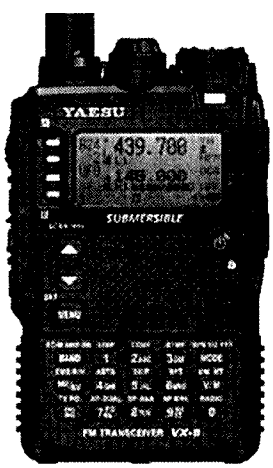
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For more details on Yaesu radios, accessories and our other great products go to

www.hamshack.com.au or email worm_hole@optusnet.com.au





FT-2000/D HF/50 MHz Transceiver

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From Handhelds to HF

VX-8R Triple Band Handheld



FT-897D All Mode 1.8-430 MHz Transceiver

VHF/UHF – An Expanding World

David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

A high pressure cell drifting across northern Victoria caused some excitement as it turned northwards along the east coast. The expectation was for an early start to the DX season for trans-Tasman VHF contacts. While signals were heard, unfortunately no contacts were made.

Interestingly, it appears that two repeaters had a QSO of sorts. The VK4RKC Brisbane 2 m repeater has input on 147.3 MHz and output on 147.9 MHz. The ZL2VH repeater near Wellington has the exact reverse – 147.9 MHz in and 147.3 MHz out. For a period, conditions were such that, once triggered, the repeaters held each other open.

While the enhancement stayed too close to the cast coast to give any real VK-ZL activity, it did provide some good propagation along the Queensland coast.

Starting at 2048 Z on September 12th, Ron VK4DD worked John VK4FNQ (1050 km), VK4AFC (1354 km) and David VK4ZDP (1306 km) – all at 5x9 and all on 2 m. Phil VK4CDI, Mick VK4NE, Wayne VK4NWH and Roy VK4ZQ were also in the mix working the northern stations. Conditions slowly dropped off as the morning progressed and at 2245 Z, Ron worked VK4MS (1184 km) at 5x2. By 0100 Z, conditions had died off.

The next morning, some enhancement was still present, but much weaker. At 2030 Z, David VK4ZDP worked VK4DD at 5x1 and Ron VK4CRO (1333 km).

VK-Microwave Group

A new email group – VK-Microwave – has been established on Yahoo Groups to cater for Australian and NZ amateur radio operators interested in operation in the microwave bands from 23 cm (1296 MHz) upwards. Discussion subjects include home and field operations, equipment construction and modification, re-use of commercial equipment and other subjects related to amateur microwave activities.

For more information, go to: http://groups.yahoo.com/group/VK-Microwave/

Hopefully, this summer will see the bridging of the Tasman on 2.4 GHz and possibly higher (10 GHz?) as stations build greater capability on either side. And hopefully, this group can help to facilitate such an event. Just 10 days after being established, there are already 80 Australian and NZ enthusiasts registered on the site.

Aircraft Enhancement with a difference

I have mentioned before the Kinetic SBS-1 ADS-B aircraft receiver. There are a number of these set up around Australia receiving position reports from ADS-B-equipped aircraft and relaying the information to the PlanePlotter server to be used by registered PlanePlotter users.

ADS-B operates on 1090 MHz and normal range for a ground station in a good location is about 200 nautical miles (about 360 km). I have often thought that these receivers could perhaps be used as indicators of enhanced propagation conditions. The problem is that aircraft normally fly at 35,000 to 40,000 ft, way above the normal inversion layers.

So, if there is tropo enhancement, what would happen is that the aircraft transmissions would be reflected up and away from the receiver and there would actually be poorer reception. EME operators have a somewhat similar problem when the moon is low in the sky with tropo enhancement deflecting their signal back towards the ground.

However, during the period of tropo enhancement reported in the previous section, the operator of an SBS-1 receiver in Brisbane reported receiving an Air New Zealand aircraft at a range of 772 nautical miles (1430 km). How could this occur?

If the enhancement duct only covered part of the path from the receiver out to a distance of say 1200 km, then the last 230 km of the path would be a non-enhanced area (for want of a better term). The signal from the aircraft could pass down through the non-enhanced area to a height where it could enter the duct and be propagated through the duct to the receiver. Judging by the reports of good propagation along the Queensland coast, but lack of contacts into ZL, then it appears that the duct may have only been close to the Queensland coast.

Similar conditions were observed several years ago where numerous meteor pings were observed in VK5 on JT65 digital signals from ZL3TY. The path is too long for meteor scatter, but there was an enhancement duct present over part of the path. Thus it seemed that the signal was travelling through the duct, exiting out the other end and then being reflected by meteors – a mode of propagation dubbed tropo-enhanced meteor scatter.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

In experimenting with JT65a at marginal levels on 10 GHz, it is very difficult to align the antenna just by beaming for maximum signal, particularly if one is waiting for the signal to just rise out of the noise. Optical communications techniques combined with techniques used in moonbounce have proved useful in optimising alignment and measuring system performance of a small 10 GHz portable station.

For non-line of sight optical communication one is often dealing with beamwidths of less than plus/minus one degree and small 10 GHz portable dishes are not much wider. Such accuracies are difficult to achieve and the optical communication technique is to draw a line on Google Earth between accurately marked positions of each station and then look for some recognisable feature close to each end of the path.

The equipment can then be aligned on this feature in azimuth using a rifle scope that has previously been aligned. In elevation, alignment can be achieved to within 0.2 degrees with a good quality forestry inclinometer such as manufactured by Suunto or to within a degree or so with cheaper units found in hardware stores.

The same techniques can be used to align a microwave dish, however, here we cannot see microwaves for visual calibration of the system. One approach is to align on a signal from a visible location but this is prone to errors due to ground reflections.

Another approach is to peak the receiver on sun noise and then set the rifle scope to this direction by centring the image of the sun which is made visible by using a thin sheet of paper covering the objective lens of the scope.

The weakness of this approach is that

it does not achieve the accuracy that is available using the adjustable graticule of the rifle scope.

While one cannot look through the scope at the sun one can look at the moon and align the graticule on its centre. Moon noise can then be used to calibrate the system. The azimuth and elevation of the moon can then be determined from programs such as Doug VK3UM's EME planner or K1JT's WSJT.

While moon noise is only about 0.1 dB on a small portable 1 GHz dish (around 65 cm), it is possible to get an adequate reading of moon noise using the broadband output of one's transverter.

Such measurements can be achieved with a power meter such as the HP432, or a Boonton power meter as used by Alan VK3XPD, or a home constructed unit as described by Charlie VK3NX at his web site below.

VK7MO and VK7TW have been using a modified Wiltron 501b level meter that gives a resolution of 0.01 dB by changing the provided 500 micro-amp meter to 50 micro-amps.

http://www.vk3nx.com/files/Noise_Meter.pdf

Other units suitable for home construction are at:

http://www.g3pho.free-online.co.uk/microwaves/noiseamp.pdf

http://lea.hamradio.si/~s57uuu/eme/noistrk.htm

Once one has a suitable measuring system, this can be used in conjunction with Doug VK3UM's EME calc program to check system performance. Doug's revised version 6.05 makes provision for small dishes by allowing dish size to be set to the nearest cm. It is available at:

http://www.vk3bez.org/vk3um_software.htm

Using typical offset dishes as used for portable 10 GHz operations and a good pre-amp, sun, moon and ground noise to cold sky should be around the values for a quiet sun as shown in the following table:

Dish Diameter (cm)	Sun noise (dB)	Moon noise (dB)	Ground noise (dB)
65	3.5	0.1	2.7
85	5.0	0.17	2.7
120	7.1	0.34	2.7

In practice VK7MO and VK7TW have achieved 3.1 dB sun noise, 0.07 dB moon noise and 2.7 dB ground noise with a 65 cm dish, suggesting a slightly lower dish efficiency than optimum.

It is useful in the field to check sun noise to confirm system performance and to ensure nothing has fallen off or become misaligned during transport. If the sun is too high for the elevation range of your dish mount one can do a quick check between ground and cold sky. Sun noise is a check on the full system including antenna, where-as ground noise checks the receiver and pre-amp but takes no account of dish efficiency or whether it is in focus.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

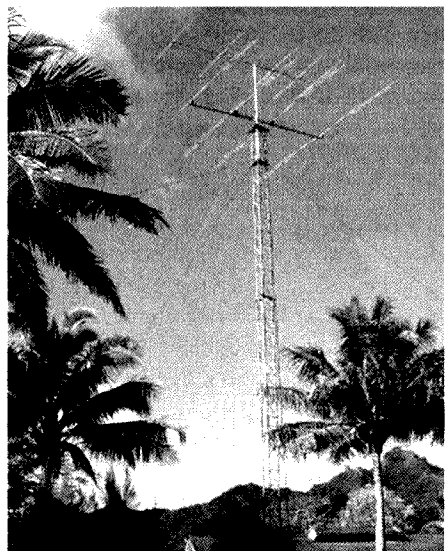
Brian Cleland VK5BC

August was very quiet on 6 m with very little activity and contacts other than via meteor scatter. The morning of September 1 though produced a surprise 'E' opening between 6.30 am - 7.00 am EST. Brian VK4EK at Saffire was attempting meteor scatter contacts into VK2 when suddenly there were S9 signals. Brian completed several contacts into VK1, 2 & 3 and also heard the VK5RBV beacon.

The past couple of summer E seasons, Paul A35RK in Tonga has been very active and has surprised many with contacts into all states of Australia and New Zealand via multi hop Es. It has been very clear if there were active stations in the pacific area many contacts would be possible via Es. Thanks to efforts from Bob ZL1RS this coming season should see activity from the Cook Islands. Bob ZL1RS reports:

Earlier this year I visited the Cook Islands (E51) with Lance W7GJ for a 6 m / 2 m EME DX expedition and holiday. Lance operated 6 m EME using an M2 6M8GJ Yagi and solid-state amplifier but over two weeks there was no ionospheric propagation on 6 m. When we met with Victor E51CG, he expressed an interest in returning to the ham bands ... including 6 m.

In August I returned to Rarotonga to help Victor raise his tower and antennas, and thanks to Lance's organisational efforts I also delivered an IC-706 to Victor from Jim KS7S. Dave N3DB and "The Worldwide Beacon Project" team were to supply a 6 m beacon but a mess up in the courier delivery meant it did not arrive in time to also go in my suitcase.



The tower and antennas in place

Victor and I worked steadily for ten days preparing his tower and antennas, including making the W5WVO modification to Victor's Cushcraft A50-5S 6 m Yagi. The mod increases the boom length by 6 feet delivering 1.5 dB more gain and a better radiation pattern. The crane arrived and the 50 ft tower with rotator was lifted into position. Then the pre-assembled stub mast with refurbished KT34 HF tribander and modified A50-5S was placed on top ... "job done" in less than 45 minutes!

Victor is now monitoring various beacon and 6 m "indicator" frequencies, as well as the usual DX calling frequencies.

The 6 m beacon was on my doorstep when I got back to ZL and will be sent to Victor before the Es season starts. The beacon equipment is a modified VHF low-band RT with a small keyer board inside. When installed at Victor's QTH, it will be signing "E51CG/B BG08ct" with 20 W of CW on 50.051 MHz to an M2 "HO Loop" omnidirectional antenna.

I am also sending a 7-element 6 m Yagi for Warwick E51WL who will be active from Penrhyn atoll in the northern Cook Islands (separate DXCC entity). Warwick will install the Yagi at 50 feet on his existing tower and will run 100 W from his IC-706MKIIG.

Thanks again Bob, I am sure all VK & ZL operators look forward to being able to work E51 on 6 m.

News from the Tablelands Radio and Electronics Club in far North Queensland: John VK4FNQ reports hearing the VK4RHT beacon regularly and on 4th August logged the VK5RBV beacon. Ross VK4AQ reports that on 25 August between 0100 and 0140 Z he worked two JA stations on CW. On the 31st, Dale VK4SIX heard the BY TV video on 49.750. Bryan VK4NMC is getting active on the magic band from Herberton FNQ. The VK4RHT beacon on 50.281 MHz is still operating in test mode from Atherton and reports would be appreciated on the logger.

Please send any 6 m information to Brian VK5BC; briancleland@bigpond.com **ar**



International Lighthouse/Lightship Weekend August 2009

Kevin Mulcahy VK2CE
Event Coordinator and Webmaster

This annual amateur radio event has once again brought amateur radio operators, lighthouses and the public together again to promote International goodwill, lighthouses and amateur radio.

This year's event, held on 15-16th August, saw an all time record number of 442 participants from 50 countries transmit from a lighthouse somewhere near their place of operation. Some travelled many kilometres by land and by sea to get to where they would spend two days talking to other operators around the globe. Coinciding with the ILLW is the International Association of Lighthouse Keepers world wide open day traditionally held on the Sunday with lighthouses open to the public some with celebratory events such a BBQs, feasts and games etc.

The ILLW is in its 13th year having commenced its existence in Scotland in 1995 as the Northern Lighthouses Award for amateur radio operators. In 1997 it became an international affair and has grown each and every year since.

This year saw a 10% increase in submitted entry forms which can be viewed on the web site http://illw.net/ Alaska was a first this year with an entry for Sentinel Island. Germany listed 55 lighthouses, Australia 49, USA 47, and England 43. Malaysia celebrated their Lighthouse Weekend with nine lighthouses taking part.

The Azores, Balearic Islands, Egypt, Slovenia, Panama were some of the smaller countries represented with one entry from each.

Some ask us what the connection is between amateur radio and lighthouses. In a word, "communication". Lighthouse keepers communicated with ships via flags in the early days, then radio in later years. Most lighthouses have a flag pole with a cross bar near the top for signal flags. Some even have a small building near the flag pole for storage of flags. Semaphore was another mode of communication as well as Aldis lamps. The lighthouse weekend aims to keep the memory alive of those men and women who maintained these navigation aids sometimes in terrible conditions. It is also an aim of the weekend to bring to the public's attention the plight of some of these beautiful structures some of which have been neglected and vandalised over the years through lack of use and supervision.

The Ayr Amateur Radio Group, the sole organiser of the ILLW, sincerely thanks all participants who have supported the event this year and in past years.

Without this support the event would not be the success it is. An indication of this: the web site shows 10 entries already received for 2010. **ar**

More ILLW reports appear in 'News From'



Report from Grassy Hill Light -Cooktown

Sixteen amateurs with families enjoyed reasonable conditions - the first time in five years that it wasn't blowing hard!! The group had good contacts in Australia, New Zealand, Malaysia, China,Russia, Finland and USA but the previous openings into Europe didn't happen this year. We also experienced rapid and deep fades on 20 metres which was frustrating as we heard stations calling but we couldn't get back for example, East Timor and Spain to name but two. Overall the contact with 33 other lighthouses was satisfying.

ILLW: Waverley Amateur Radio Society

Laurie Gordon VK2GZ

This special QSL card is being produced to mark Waverley Amateur Radio Society's Lighthouse activities as part of the club's 90th year celebrations.

Club members activated three sites during the International Lighthouse/ Lightship Weekend.

Macquarie Light at Vaucluse is the oldest lighthouse in Australia and has been a regular part of Waverley's calendar for the past several years.

This year it was decided that it would be a fitting occasion to add the two other Sydney lighthouses in the club's area.

Hornby Light on the tip of Sydney Harbour's South Head and Endeavour Light on the northern cape of Botany Bay completed the trifecta.

Operating hours were restricted at each site, with Hornby and Endeavour requiring gear to be carried in by hand. One of the club's youngest members, David VK2FHBK, made his mark as the only operator to make contacts from all three lighthouses over the weekend! **ar**



Table Cape

Wayne Hays VK7FWAY and Eric Edwards VK7FEJE

Table Cape Lighthouse is just to the north west of Wynyard, perched 150 metres above sea level on steep cliffs overlooking Bass Straight. It is an excellent radio site with good views in an arc of 180 degrees from south east to the north west.

Early Saturday morning Wayne VK7FWAY headed up to Table Cape Lighthouse with his truck come radio shack, plus all the antennas and masts. By the time myself (Eric VK7FEJE) and Vernon VK7VF arrived, Wayne had all the antennas up and running with only a small amount of testing to do.

After contact with Winston VK7EM at the Mersey Bluff Lighthouse at Devonport, and Bill VK7MX at Low Head Lighthouse, everything was ready for a great weekend of contacts with other lighthouse stations.

During the day several club members from the Cradle Coast Amateur Radio Club visited to offer assistance, which was greatly appreciated. During this period lots of contacts were made around Australia and New Zealand, using both the club callsign (VK7NW) and our own Foundation calls. After most people departed late in the day, Wayne and I settled down to working some stations and lighthouses in the northern hemisphere.

It was not as cold as last year and we worked much later, calling it quits about 1:30 am to rise again at 5:00 am and check on other stations on the eastern seaboard to see how they fared during the night, especially the VK3s who, like us, suffered from strong winds throughout the night.

Early on Sunday the strong winds and thunderstorm cells appeared out of nowhere, and as our antennae were very exposed to the strong nor-westerly winds, at about 10:30 am we pulled down the G5RV and the HF squid pole.

A quick word was passed on two metres to Winston at Mersey Bluff Lighthouse to be aware that strong winds, thunder and lightning were on the way towards him from the west, so he could take action if needed.

Then it was just a matter of packing up, heading for home for a quick shower and much needed rest so we can plan again for next year. Cheers from Wayne VK7FWAY and Eric VK7FEJE.



Wayne VK7FWAY and Stephen VK7FWWF inside, and an outside view, of the truck-mounted portable radio shack at Table Cape Lighthouse.

News From

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

It is interesting the number of VK2 radio clubs celebrating anniversaries. This time it is the **Orange & District ARC** who turn 50 next year. Vice President Bruce VK2DEQ reports that at the recent AGM of the Club, two long serving members Robert VK2ZRJ and Peter VK2ETK were presented with Honorary Life Memberships. (See Box)

Members and friends of the Orange & District ARC are encouraged to meet on the 2 metre FRED net conducted each Sunday morning following the VK2 broadcast. Operators are reminded that the new FRED frequency is 147.025/147.625 MHz.

The Orange & District ARC meet on the first Friday evening of the month at 7.30 pm at 64 Warrendine Street. All are welcome. Further information about the Club and its activities are available from the Secretary, PO Box 1065, Orange 2800 or at www.odarc.org

The **Blue Mountains ARC** conducted a very successful Winterfest at their new meeting location near Penrith in late August. Over 300 attended on a fine winter day. Several club members have also just completed a DXpedition to Poeppel Corner, the junction point of VK8, 5 and 4.

It is now about three months until Scouting Australia's next Jamboree which is being held at Cataract Scout Park(south of Sydney). The event is referred to as "AJ2010" The site has a permanent amateur radio facility and the **Fishers Ghost ARC** is its caretaker, advises Wal VK2ZWK.

They are preparing the site and making some modifications to the shack. Many clubs have already offered assistance for operating during the day from January 4 to 14, 2010. The FGARC will provide the evening operation. If you can help during the day or need more information contact Wal at vk2zwk@wia.org.au or by telephone 02 4626 8423.

A reminder that the **Wyong Field Day** is getting closer on 28th February 2010 and provision has been made to fit in more "Flea Market Stall Holders" advises Ray VK2HAY. Contact the **Central Coast ARC** if you require to book a space.

While on field days, there is the Radio Expo in Coffs Harbour on Sunday 17th January 2010 hosted by the **Mid North Coast ARG.**

The **Hornsby & District ARC** will have exams at the end of this month at Waitara – Saturday 31st October.

The **Manly Warringah Radio Society** have moved again to a new location. The 1st Terrey Hills Guides Hall in Beltana Avenue, Terrey Hills. They meet on Wednesday evenings.

Waverley ARS conducted exams last month, a regular event in Sydneys eastern suburbs. This year they are celebrating their 90th.

Hunter Radio Group paid a visit to the **Kurrajong Radio Museum** recently. The Museum's operator Ian VK2ZIO reports increased interest in the KRM is being shown after the exposure on the ABC Collectors program. Locals and visitors to Sydney should set aside a day on a weekend to pay a visit. You can also take Ian that piece of disposal equipment (in good condition) rather than take it to the tip which may have been your intention.

Summerland ARC have concluded their month of celebrations, the final activity was an advanced licence course with five starters, four of whom were successful. A Standard course is planned. They have also had a construction day of a UHF SWR meter, made available by Bruce VK2VA. Orders for this kit ($35) can be directed to John VK2JWA at treasurer@sarc.org.au

A VK2 operation is planned from **Mt. Kosciusko** for the mid summer Field Day next January. Details in a future issue of AR. This month will be busy for **NSW WICEN** with the annual Barrington Tops search for a lost aircraft and the Hawkesbury Canoe Classic.

ARNSW have advised that work commitments has forced Norm VK2TOP to retire from his position on the committee, a trip to attend meetings from northern VK2 he made most months. Norm will continue to process membership renewals for ARNSW. The ARNSW membership register had continued on from when those WIA members in VK2 were through the NSW Division. Recently a post out was made to all unfinancials on the register.

If you received a reminder letter please respond with your intentions so that the records can be adjusted accordingly. Anyone wishing to become a member of ARNSW can find a application form on the ARNSW web site: www.arnsw.org.au The education team associated with ARNSW will again be conducting the full range of exams at the Wyong field day on February 28th 2010, advises group leader Terry VK2UX. The last Trash & Treasure for the year at VK2WI is scheduled for Sunday 29th November.

In preparing these notes I rely for some of the material in the news items submitted to **VK2WI News.** What I have noticed is while many submitters advise several times leading up to the event or activity but rarely is there any follow up with the results.

For example - it might be their AGM is to be held but nothing appears as to who was elected for the incoming year. Maybe it is a field day and again no report on how it went. These 'after event' reports would inform listeners and readers of the outcome as well as provide addition variety to the news bulletins and be a reference source for some future history. Please consider - as someone once said.

With next year being the centenary of the **WIA** - a bit of history.

The 'Institute' resulted from a meeting held in Sydney in March 1910. When the NSW Division was celebrating its 50 years there were four Branches of the Division. In addition, the State was divided into zones. At this time there were only a few clubs.

The four Branches were Illawarra, Blue Mountains, Central Coast and Hunter. The first to leave was the Central Coast who were seeking to acquire their Kariong club rooms and could not do so as a branch of a company. Then Illawarra and Blue Mountains left to form their respective clubs.

The Hunter Branch remained until a new set of Articles for the Division

removed the provision for Branches. They have since changed over to being the Hunter Radio Group.

A subgroup of the Division in the same era was the VHF Group, later to add '& TV' to their title. They were an active technical group with an evening broadcast, now the evening VK2WI session. Also each month there was a meeting, an evening Fox Hunt and a field day event. They faded out towards the end of the time the Division was at St. Leonards. Today the Home Brew and Experimenters Group is the equivalent.

Also in the 1950s the Division was looking at securing a city property. Instead the funds and effort went into establishing the VK2WI station at Dural in 1955.

Then in 1959 the 14 Atchison Street, St. Leonards property was purchased, made possible by the Division obtaining and selling on to members the vast selection of WW2 radio and electronic surplus. Soon after the Atchison Street purchase, the rear of the cottage was demolished and a hall and basement disposal area was built and opened in 1962.

Until the opening of the hall, the Division had been meeting at Science House in the city. Monthly meetings were then conducted at Atchison St until changes in the Articles replaced them with Club Conferences.

In the early 1980s the development of the St. Leonards area, the increasing high rise and parking difficulties resulted in the sale of Atchison Street and the purchase of 109 Wigram Street, Harris Park.

In 2004 when the changes occurred in the WIA structure, the role of the NSW Division also changed. It went from being the NSW Division and became Amateur Radio New South Wales. It continues the role of being a state-wide radio club. Currently its main activity is the Sunday VK2WI news bulletins and hosting the Home Brew and Experimenters Group.

The Harris Park property was sold in 2006 with the intention of concentrating all activities at the Dural site. Part of this operation was the construction of the multi purpose storage shed – something that is taking a little longer than first hoped. Last month some of the internal fitting out was started.

If the timetable can be maintained, all will be ready for the centenary which is March 2010.

73 Tim VK2ZTM. **ar**

Orange Amateur Radio Club makes two Honorary Life Membership Awards

At the recent Annual General Meeting of the Orange and District ARC two long serving members were presented with Honorary Life Memberships.

Robert Alford VK2ZRJ attended the very first meeting of the Orange Amateur Radio Club in October 1960, nearly 50 years ago and is the only person to have maintained continuous membership from then until now. During that time Robert has been active in promoting amateur radio by serving on the Club committee and by helping to establish and then maintain FRED, the first operational 2 m repeater in Australia. He has been the WICEN coordinator for the Central West and has coordinated many real and simulated emergency networks.

Robert is a life-long member of the Orange community. After leaving school and completing an apprenticeship with Email (now Electrolux), he worked as a radio technician for much of his life. Currently he operates his own business supplying and supporting radio communication systems throughout the central west of NSW.

Peter Carter VK2ETK has been a strong supporter of the Club since moving from Sydney some few decades ago. Many Sydney "Old Timers" will remember Peter from his old call signs VK2ZPC and VK2TK and especially his interest in the VHF & TV Group. He too has served on the Club committee and has been a prominent and active member of WICEN and of the Club.

Peter, now retired, still maintains his enthusiasm for amateur radio, but is probably better known around Orange for his interest in music. He has been involved with both the Orange Regional Conservatorium and the local community FM station, where for some years he presented a program on Sunday evenings titled "A Touch of Classical". Peter has been able to put his technical knowledge to good use by digitally recording and then producing CDs for many local musical events.

Congratulations to both these gentlemen for outstanding service to the Orange & District ARC and to the general promotion of amateur radio.

The Orange & District ARC will celebrate their fiftieth anniversary in October next year. The committee is hoping to compile a history of the Club and would appreciate any stories, photographs, logbook entries, QSL cards etc from everyone who may have had some connection with the Club in the past, especially in the early days. Any information can be sent to the Secretary, Orange & District ARC, PO Box 1065 Orange 2800. Further details about the Club and its activities are available by logging onto the web site (www.odarc.org).



Robert Alford VK2ZRJ and Peter Carter VK2ETK

News from

VK3

Amateur Radio Victoria News

Ross Pittard VK3CE

Website: www.amateurradio.com.au

Email: arv@amateurradio.com.au

Gateway is on for VK3RMM D-STAR Repeaters

The D-STAR repeaters on Mt Macedon north-west of Melbourne are now connected to the D-STAR internet gateway enabling it to be linked to many other similar repeaters. Amateur Radio Victoria switched on the gateway on Tuesday 18 August for the 2 m and 70 cm repeaters using 3G wireless broadband after ADSL and other wireless options were found not to be possible at the site.

After a very substantial expenditure for new antennas, installation, cabling and new filters, the VK3RMM D-STAR repeaters first went on air in June for initial testing, essential to ensure compatibility with other radio services at the site. After a number of false starts due to broadband services providers not living up to their advertised claims, the wireless modem and gateway was installed on site by Ross Pittard VK3CE.

Many D-STAR users became aware that the gateway had opened on VK3RMM including a couple of hams from the United States who were among the first to use it. The final part of the project will be installation of the 23 cm D-STAR digital repeater that requires further antenna rigging.

Amateur Radio Victoria again acknowledges the generous donation of the D-STAR repeater modules by ICOM (Australia) and the technical support of the National D-STAR Instructor/ Administrator Richard Hoskin VK3JFK.

ILLW

Another successful International Lighthouse and Lightship Weekend with VK3WI at the Williamstown Lighthouse and Timeball Tower AU0036. A special QSL card is being issued for all contacts. Thank you to our Chief Operator this year, Ian Downie VK3XID and the others who helped put the station on air including Tony VK3VTH, Wayne VK3VCL, Peter VK3QM, Victor VK3DKM, Johnno VK3FMPB and Jim VK3PC. Plans have begun for ILLW 2010 at Williamstown, and also participation again in the International Museum Weekend (IMW) in June.

This year under the callsign VK3RAN, Amateur Radio Victoria operated from HMAS Castlemaine at Williamstown for IMW, and in 2010 there is a possibility of operating from the ship plus another museum.

Victorian Local Government Award

Also the first claim for the Victorian Local Government Award has been received from Craig Edwards VK8PDX – well done. This operating award has been initiated by Amateur Radio Victoria to encourage on air activity based on communicating with and between the 79 local government areas in the State of Victoria.

More details along with those of the Keith Roget Memorial National Parks Award can be found in the Awards section of the website. There must have been others who made sufficient logged contacts to qualify for the award during the Worked All VK Shires in June and perhaps more award claims can be expected soon.

Up and Coming Events

The 52nd Jamboree Of The Air is 17 & 18 October and VK3WI will again be supporting the Girl Guides Association.

Our next Foundation weekend course will be held at ARV offices in Ashburton on the weekend of November 28/29. Please contact Barry Robinson VK3PV on 0428 516 001 or via email at foundation@amateurradio.com.au

Don't forget the Centre Victoria RadioFest returns to the Kyneton Racecourse on Sunday the 14th of February, gates open at 10am. We are still looking for volunteers to present small talks on any aspect of our hobby, if you could help us please contact the organising committee at radiofest@amateurradio.com.au

Why not join and support the state-wide organisation Amateur Radio Victoria, it costs $30 for Full or Associate membership and $25 Concession, for two years. New members are most welcome and an application form can be found on our website or will be posted out on request.

ar

Amateur Radio Victoria

Centre Victoria RadioFest No. 3

This major amateur radio event is on Sunday 14 February 2010. At the Kyneton Racecourse an hour from Melbourne, Ballarat and Bendigo.

Proudly supporting the WIA centenary celebrations.

Sales space bookings and more info:

www.radiofest.amateurradio.com.au

"Hey, Old Timer..."



If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194

2009 ILLW — 441 Lighthouses and Lightships — and just one timeball, at Williamstown in VK3

John Karr VK3FMPB

The International Lighthouse and Lightship Weekend 15-16 August only had one Timeball Tower registered which is located at Williamstown just 12 km from central Melbourne by road.

Activated for the fifth year in a row by Amateur Radio Victoria VK3WI, this iconic bluestone structure is at Gellibrand Point on Hobsons Bay, and its history goes back to 1849.

The tower was operated up until 1926 with the last dropping of the timeball on 31 August or the 1st September 1926 depending on which paper you are reading. The timeball was restored in recent months by the Gellibrand Rotary Club and was seen to fall at 1 pm.

This year the VK3WI chief operator was Ian Downie VK3XID, who initiated the first Amateur Radio Victoria activation, with others including ARV President Jim Linton VK3PC who was there once again.

Everyone was made feel most welcome with those attending including Tony VK3VTH, Wayne VK3VCL, Peter VK3QM, Victor VK3DKM and myself Johnno VK3FMPB. The various tasks including antenna erection and operating were shared.

The weekend saw the first on air contact made by 0930 and soon after the first of many lighthouses were logged, which was the Manly-Warringah Radio Society VK2MB at the Barrenjoey Lighthouse in NSW.

By 1630 60 contacts had been made despite a QRN level of S9. It was hard going so VK3WI took extreme patience with a number of Foundation and mobile stations that managed to have their signal just heard.

Equipment being used was an ICOM IC-706 MKIIG, AT-7000 automatic ATU, and a Yaesu FT-897 and AT-897 ATU. Antennas which were set up included 80 m and 40 m dipoles with their centre points at the top of the lighthouse creating inverted vees, a 20 m vertical and a 2 m and 70 cm collinear vertical.

Visitors are numerous and quite a few of them stopped to have a chat about what is going on. Perhaps we have managed to plant a seed and sign up a few future Foundation callsigns in the process.

The night session from about 1800 onwards was running hot. Stations coming up all over the place: VK2, 3, 4 and 5. The log book was filled up nicely.

Then it was decided to check the door lock, with Wayne and Jim inside and Tony outside. The result was that the lock froze shut; this development was made known during a QSO much to the amusement of everyone on frequency.

Wayne dismantled the lock, cleaned it out, used some WD-40 spray and put it all back together. At 2200, it was a good time to go QRT.

Early on day two, Jim VK3PC joined Tony VK3VTH who opened the station at 0700. The log was filling up with the Remembrance Day Contest and by midday 125 stations had been worked including three ZL lighthouses and more lighthouses from around VK3, VK7 and VK2.

With a heavy band of rain and 40 knot winds, the noise level on 14 MHz fell to S2 but stayed at S9 on 7 MHz, leaving the operators scratching their heads as to why this was so.

They took advantage of the improved conditions on 20 m and worked it like mad. 'VK3WI lighthouse station calling CQ, CQ, CQ, VK3WI Lighthouse CQ RD Contest and standing by...' I am sure I will remember that call until I die after hearing it at least 100 times over the weekend.

Tony VK3VTH continued calling but no new lighthouses were available at that moment. So you can see that such fun events and contesting can be tedious and even boring at times.

An electronic entry for VK3WI in the RD Contest is being compiled by Tony VK3VTH while Jim VK3PC has undertaken the job of QSLing, and his only disappointment was not making contact with a particularl lighthouse.

Adam Shrimpton VK3PHY, who was to walk 18 km to reach the Wilson's Promontory Lighthouse, had been heard in contacts with others, but VK3WI unfortunately missed out, due to the conditions.

With closing VK3WI at 1600 on the Sunday, all agreed it was a worthwhile operating event and social gathering and I am sure most will return for ILLW 21-22 August 2010. **ar**



ALARA

Aysha Venugopal VK5FASH

Marilyn VK3DMS honoured

The spring sun seemed to have turned out in full glory over Adelaide on Friday September 11 to honour retiring ALARA committee member Marilyn Syme VK3DMS.



Marilyn Syme VK3DMS (left) receives her certificate of appreciation for 30 years of service to the ALARA committee from ALARA president Tina Clogg VK5TMC

The ALARA table at the South Australian Museum's Balaena Cafe had a good turnout of ALARA members as Marilyn and her OM Geoff VK3ACZ came down from Mildura where they live to accept the honour. Current ALARA president Tina Clogg VK5TMC presented her with the certificate of appreciation and a lovely necklace as a memento.

The ALARA committee is now planning to establish a little tradition by honouring all of its long-serving committee members.

A former ALARA president, Marilyn has served on the ALARA committee for 27 years in various capacities since getting her call sign in 1980. She was inspired by her husband Geoff who picked up amateur radio while running the post office at Pooncarie in New South Wales in 1977.

Though Marilyn was on the ALARA Net as Geoff's second operator, she went off frequency for two years from 1978-80 until she obtained her own amateur licence. After that, there was no stopping her. She served for the first time on the ALARA committee as the Victorian representative in 1982 and since then held several posts such as vice-president, president and contest manager.

As president, Marilyn steered the

Continued at head of page 37



ALARA YLs (top row from left) Aysha Venugopal VK5FASH, Pat VK3OZ, Tina Clogg VK5TMC, Marilyn Syme VK3DMS, Jade Ross VK5FXYL and her son Brendan, Myrna VK5YW, Maria McLeod VK5BMT, Lesley Smit VK5LOL, Jenny VK5FJAY, (seated from left) Sharron May ZL3GL, Jean VK5TSX and Shirley VK5YL at the South Austalian Museum's Balaena Café on Friday September 11.

Miss ALARA correction

In the photo on page 35 of *AR* September 2009, Dianne VK3FDIZ is holding "Love-a Duck" not "Miss ALARA" as captioned. *This is a picture of "Miss ALARA".* Thanks to Jean Fisher VK3VIP, VK3 Representative for ALARA, for the correction.



VK6

A last minute plea for input resulted in a flow of information this month! It seems one of our local amateurs has way too much time on his hands as he is now on the committee of just about all of the metro clubs except the NCRG! I am talking of Heath VK6TWO who has submitted reports not from one or two of the metro clubs but from four of them! So without further ado here are Heath's notes.

WARG

It has been an interesting few months since the AGM and we are seeing some very positive changes. We are trialling some new repeater/linking controllers with all of the bells and whistles for manual/automated repeater RF linking.

Our initial trial is between our existing WIA linking hub at VK6RAP and our latest site at Walliston, VK6RLM where our DSTAR repeaters are also hosted. This will allow us to determine a 'standard controller' for our overhaul of the WARG repeater network.

Next we will be assessing some link transceivers and repeaters on which to standardise.

The new committee has introduced a 'Site Register' to manage all of the information regarding equipment at

International Lighthouse Weekend

Our intrepid Lighthouse operators were once again travelling to the deep south to experience lousy weather and even poorer band conditions! A report from Nigel, who is now VK6NI.

Once again the 'Capes' were active for the International Lighthouse Weekend. Wally VK6YS was at Cape Leeuwin under the call sign VK6CLL, and Nigel VK6NI and Bernard VK6FBRB were at Cape Naturaliste using the call sign VK6CNL.

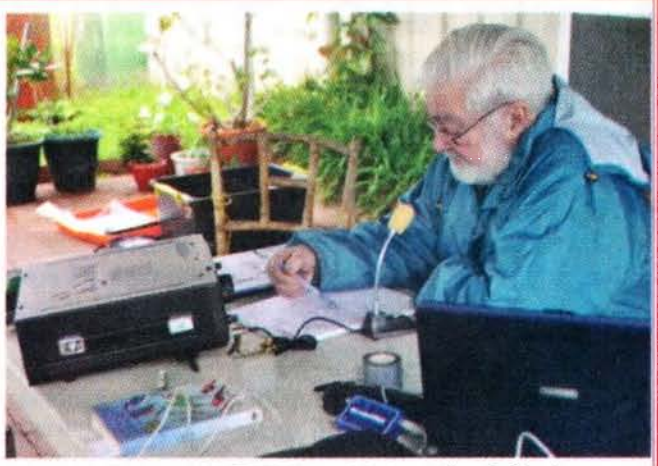
Conditions were not the best (an understatement) with winds gusting to 120 km/hr with rain and, at times, hail falling. The weather was so bad that both stations operated on simple antennas on the Saturday and only VK6CNL at Cape Naturaliste managed to get the Spiderbeam up on Sunday.

Cape Leeuwin contacted 20 lights and Cape Naturaliste 13 lights. Propagation was poor with mostly stations in VK and ZL contacted and only a couple of Lighthouse's outside of the region worked.

Both stations participated in the Remembrance Day contest handing out numbers when asked. This is the third year that the joint operation has occurred and it could only happen with the co-operation of the managers of the tourist facilities at both lights.

We especially thank Luciano and Karma, the managers at Cape Naturaliste who very kindly gave us the run of their home in one of the Lightkeepers cottages to set up and operate.

More information and a short movie of the Cape Leeuwin operation can be found at http://www.westozdx.net/LIGHTHOUSES/LIGHTHOUSES.html



Above is Bernard VK6FBRB and below, The Spiderbeam at VK6CNL Cape Naturaliste lighhouse.



all of the WARG repeater sites such as antennas (types/gain/height/connectors), transceivers (type/connectors/power) and DC system (PSU/batteries/type/connectors) and so on.

They have also introduced a 'task list' to keep track of all outstanding and future tasks. This should allow more members to get involved in WARG activities and be prepared for what equipment might be required to complete the task on-site.

The VK6 Packet/APRS has been given a new life and is in the process of an overhaul and expansion thanks to the enthusiastic work of VK6FUN and many others. D-STAR has become quite popular especially with some of the newer hams to the hobby. We have seen a recent increase in VK6'ers utilising DVDongles to keep in contact while they are on the road with work or where RF is a problem.

Heath VK3TWO/VK6TWO – WARG President

HARG

The AGM has seen some changes to the committee which should have some positive effects in exciting activities for club members.

Recent projects such as the tower replacement, new HF beam, new quarter wave 40 metre vertical, new 6 metre beams, new 2 metre beams and shack reconstruction is expected to continue to improve on the club operating atmosphere.

Marty VK6FDX and Heath VK6TWO conducted a reconnaissance for a potential field site for use in the near future for a weekend of experiencing/sharing a field setup. Since then, many members have been 'scouting' for potential field locations. Hopefully with summer approaching, we will see many weekends of AR fun.

The RD contest saw most HARG members participating from their home QTHs and exchanging points on all modes and all bands from HF to 23 cm. Local competition was fierce this year and VK6 looks forward to many RD trophies for 2009.

Heath VK3TWO/VK6TWO – HARG Vice President

VK6 WICEN

WICEN has been very active with some very exciting events such as Australian Safari, Targa West Rally, Forrest Rally and the Donnelly Rally providing critical SOS (Safety On Stage) official tracking and reporting of the entrants and other critical timing and message handling.

WICEN is currently increasing its membership and is recruiting new members to get involved with this exciting yet critical service to the wider community. If you are interested in supporting your local and wider community in the event of a disaster, join WICEN to learn formal message handling procedures to/from other organisations such as Police, Fire, Ambulance and SES. You will get free official access to rallies where you can put your training into practice so that you are prepared in the time of need. Experience what you need for a typical 'field' setup so that you can be self sufficient in providing emergency services to others. Enquiries should be forwarded to the VK6 WICEN State co-coordinator – vk6zuk@wia.org.au

Two members of WICEN (Heath VK6TWO and Danny VK6ZUK) setup up a typical emergency station for use as an RD field station. Equipped with the 'portable shack' consisting of masts, Yagis, discone, dual-band collinear, solar panels, generator and some creature comforts, it was a site other hams visited with surprise. 'Decked out' with IC-7000s, FT-847, ID-1, IC-2820s, 300 Ah batteries, auto-ATUs and more wire than you can poke a stick at, it has motivated visiting amateurs to play 'real AR' out in the field.

Heath VK3TWO/VK6TWO – WICEN Technical Officer

WA VHF Group

After a recent display of SDR (Software Defined Radio), the club has decided to run some practical sessions to build some SDR kits. The plan is to have a collaborative approach to each kit build, and sharing experiences, tips and testing with other members. In the spirit of AR, this will be open to any (non-members) who wish to participate.

The 'intelligent beacon' project is still a work in progress, however a few unexpected setbacks have caused some delays.

Heath VK3TWO/VK6TWO – VHF Group Councillor

Well Heath is certainly a busy boy and his contributions are much appreciated. My plea for news this month also brought Bob VK6POP out of the woodwork with news from the Scouts.

Scouts WA

The Scout Communication Team was busy on the RD contest weekend. As well as participating in the RD, they ran a Foundation Licence course. The licence course was conducted at the Peter Hughes Scout Communication Centre. Two Leaders and six scouts from 4th Victoria Park Scout Troop passed their assessment. Congratulations to all involved.

Meanwhile, the rest of the team, ably assisted by four scouts and a Leader from Waylen Bay Sea Scouts, took part in the RD Contest. The Waylen Bay Scouts all obtained their Foundation amateur licence at the end of 2008.

Congratulations to Flynn VK6FFFF, who decided late Saturday night to work VHF on his own. Flynn managed exactly 100 contacts.

The Scout Communications team had a table at the recent Hamfest. We did well, and the money is being put to good use buying equipment to support portable operation of the two metre repeater that the team is building.

Thanks Bob, it sounds as though the Scouting movement is still very much a gateway into amateur radio.

Another item from Nigel

The West Oz Dx group (http://www.westozdx.net/IOTAS/OC211/OC211.html) is planning to activate the Houtmann Abrolhous (OC211) over the New Year break this year. The organizer is Wally VK6YS and participants so far are Bruce KD6WW and Nigel VK6NI. Transport to and from the islands has been arranged as well as the use of a fisherman's shack as the operating location. OC211 is on the IOTA 'Most Wanted' list. With only 10.8% activation recorded the weekend is bound to be busy. We are looking for at least one more operator with CW experience so if you are interested in a full on weekend of radio operation contact Wally VK6YS@westozdx.net

Regards, Nigel VK6NI (ex VK6KHD)

Thanks very much Nigel, I imagine conditions were pretty bad, having been at the Leeuwin light in a massive storm many years ago - it is scary when those

Continued at foot of next page

ALARA continued from page 34

association through some difficult times. In turn, the friends she made were a source of support at times of personal trials. Retiring at 72 from ALARA, it is truly remarkable that Marilyn was actually one of the original group that framed the Association's constitution and is part of its history.

Talking about what she loves about ALARA, Marilyn said, "It is being part of ALARA, the friends I have made and the contacts I have made. I am very proud of what ALARA has become and very proud of being what made ALARA." After retiring, Marilyn is now looking forward to her 50th wedding anniversary in November this year with her OM.

VK5 monthly lunch

The ALARA monthly lunch turned out to be really special as Adelaide had some international visitors. Pat VK3OZ came in from Melbourne bringing her sponsored YL Sharron May ZL3AE and her OM Glenn ZL3GL who were visiting Victoria and South Australia. Taking the long route to Adelaide from Melbourne by road, they had driven down the scenic Great Ocean Road. The visitors seemed to have enjoyed their trip, Apollo Bay and the warm Adelaide weather. Pat and Sharron had met during the ALARA meet in Tasmania in 2008 and struck up a good friendship.

ALARA contest

The 29th ALARA contest on the last weekend of August saw the YLs enjoy themselves, despite the propagation conditions. Lesley Smit VK5LOL (formerly VK5HLS) had her first stint as contest manager for ALARA. The contest had its exciting moments with YLs being able to contact Mary Moore WX4MM from USA who got at least seven contacts into VK. Shirley VK5YL managed a contact with Elizabeth VE7YL in Vancouver, Canada, while Pat VK3OZ had a feast with her CW contacts.

If you are interested in contesting or want to get interested, this could be an exciting time to get into it.

Lesley is keen to encourage more "F" calls among YLs to participate in the contest and would like to have some suggestions.

This year, 34 YLs participated, which was a wonderful thing.

There were also queries about the contest rules that will be addressed with the committee before next year's contest. One major advantage during the contest was the new logging software designed by Mike Subocz VK3AVV. Thanks Mike, says Lesley. She used it for the first time this year and says it certainly made her work as contest manager a lot easier.

Before you send in your logs, do check again. You might be eligible for an ALARA Award with which to decorate the shack and not realise it.

All that VK and ZL amateurs need is 10 YL ALARA member contacts from four different call areas while DX amateurs need just five YL ALARA member contacts from three call areas.

The certificate is a lovely one designed by Kathy Gluyas VK3XBA and has all the floral emblems of all the states and territories of Australia.

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VK6 News continued

six metre plus swells roll in! Also there must be a CW operator who wants to spend a weekend on the Abrolhous islands, pity my speed is abysmal!

NCRG News

The NCRG has been busy recouping from Hamfest this month, assessing what needs changing and planning next year's event. Feed back is always appreciated from amateurs around the State as to what you think could be improved, added, removed, whatever. Please take time to let the committee know so we can work on it for next year's event. Email me in the first place and I will pass it on.

The contest season will soon be upon us and plans to visit Muresk for the next Oceania DX contest are in place, and other contests such as the CQWW DX SSB on 25 October are lined up over the next few months. Bernd VK6AA and Kevin VK6LW will be making a big effort in the CQ WW DX CW contest in November from the club station; I hope they do well!

Incidentally the NCRG had a visit from Nick 9A6DX recently, an avid contester from stations all over the world. He told us he had operated from 94 countries on his work travels and took every opportunity to visit and operate from local clubs. We were very surprised when he told us of all the clubs in the world he had been to the station at NCRG and the club station in Lima, Peru were the best of the lot! You get that warm fuzzy feeling when people tell you that!

It is a pity that the two or three nights he used the club station, the conditions were shocking. Like so many others who have visited us in Western Australia, he was amazed at how the propagation from this part of the world is so difficult to comprehend. So much so, that when he is in Lima at Christmas, he has offered to set up some skeds to enable some of us in WA to get our first OA contact. I personally look forward to that because after twenty two years living in Perth I have three South American countries worked and I had all bar one confirmed on 10 metres from the UK back in the 80s.

Finally in NCRG news I would like to remind all WA amateurs that the NCRG will be holding an open day / car boot sale at the club premises in Whiteman Park on Sunday 14 March 2010 to commemorate 100 years of the WIA. You are all most welcome and more details will follow. Please come out and visit us if you would like any Sunday morning between 9 and 12 am and have a look around.

Enough of these ramblings; thanks for your attention this month and note I have given up on wishing you good DX as the Sun just is not listening to me.

Till next month, 73 Keith VK6RK

vk6rk@wia.org.au

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Remembrance Day Contest Report

IPSWICH & DISTRICT RADIO CLUB

REMEMBRANCE DAY CONTEST 2009

Mike Charteris VK4QS
President

It has been at least a decade since operators from the Ipswich & District Radio Club had participated in the "Remembrance Day" contest. We duly decided that this year 2009, would see the radio club put in and activate the club call sign VK4WIP. The underpinning motivation was to encourage the club's "F-call" operators to gain valuable experience in a busy operating environment.
Listening intently to the W.I.A broadcast, we all gained a new perspective as to why we were actually here.

"The passing of amateur radio operators during World War Two"

Remembrance Day, is the day of the year that the amateur radio community have the opportunity to pause, and remember those servicemen who paid the supreme sacrifice during World War Two.

It has now been more than six decades since the last shots of WW II were fired. For many, the links to this turbulent period of time are still of a very personal nature. There are still hams alive today who actually fought in scorching deserts of Africa, not to mention the steamy jungles of New Guinea.

Many amateurs, whose fathers, uncles and now grandfathers, fought and were perhaps killed or wounded, or came home broken, to recall with both sadness and joy this day, August 15th 1945. And furthermore down the generations since 1945, there are amateur radio operators today who have, and continue to serve our Defence Forces, so allowing us to enjoy the freedoms we take for granted.

Preparations

We gathered at the radio clubhouse on Saturday morning to an 80m dipole. This important task was handed over to the Club's "F" Call members.

The antenna theory and calculations were worked out on the white board before any construction began. We were lucky enough to have at hand a roll of the Military 600 Ohm wire, known as Don-10. This is a very strong twin pair consisting of both copper and stainless steel wires in the one sheath.

Once the mathematics had been completed, the wire cutters and soldering iron appeared. The wire was stripped and lugs soldered as connection points, as well as insulators tied off on each leg for attachment to tie ropes later.

Next came the RG58U and the PL259 plugs, plus a few lessons in how to, and how not to, solder these plugs in order to maintain a good braid connection.

Skyhook

Once the 80 m Dipole was completed, the connections of the PL259's were tested, and it was then time to erect our Skyhook.

This was a 10 metre "CLARK MAST", which was erected out the front of the Clubhouse as a high feed point for the dipole. Our resident expert in this operation was Sergeant Paul Weir VK4FPDW. Paul is currently serving in the Australian Army, and undertook this task with great zest and all the professionalism we have come to expect from members of our Defence Forces.

We had quickly raised the 80 m Dipole to the top of the Clark Mast. Sadly the circumstances dictated that the lay of the land would not support a dipole. We then decided to change the format to that of an Inverted "V", and duly tied off the ends to tree points of a suitable height.

The time was 1400 so we adjourned to our home QTH's to await the setting sun. Our Foundation members had from the very beginning shown great enthusiasm for the many tasks required to make this a success. A hands-on approach was the overall goal in order to give our new Foundation amateurs valuable field experience they could use.

BBQ & contesting

As the sun set the air was filled with the enviable scent of steak & onions, with BBQ sausages topping off the menu. In the background the WIA Broadcast told us of the Amateurs who had died during the last World War. For their sacrifice and that of many thousands of others, we were here tonight enjoying the freedom they fought and died for so long ago. At the clubhouse that night we had two serving members of the Australian Defence Force, and two ex-service members. Our special guests for the BBQ were Mr. Ewan McLeod (National WICEN coordinator) and his good wife Margaret. I would like to thank them both, as their schedule is one of the busier in our organization..

As the WIA Broadcast drew to a close, we enjoyed the BBQ meal and the company of good friends. The Foundation guys keenly readied themselves to begin operating. Many had brought transceivers to operate and give ourselves the best chance possible of making contacts.

One station operated on 80 m and another on 40 m with no undesirable interference or effects between them. As the evening progressed the Foundation operators exchanged with other "F" Calls to sit back and socialize with the rest of us.

The call sign used was that of the Radio Club "VK4WIP". The propagation into Ipswich on the evening saw a good number of contacts made as a total for all operators. Sometime around 2200 it was decided to throw the big switch.

Our Foundation Operators had enjoyed a great day and gained valuable experience in building antennas as well as operating in a busy contest environment. Thanks to all who participated in the antenna work and the RD Contest.

In the next year some significant changes to the Club's antenna structure will take place. With these improvements and perhaps a pick up in the sunspot numbers we will acquit ourselves much better than our first attempt in more than a decade.

We look forward to working you next year

Cheers & Best 73 Mike VK4QS **ar**

WICEN at the Pyengana Equine Endurance Ride

WICEN Tasmania (South) heads north east to horses, cheese, sushi and a beer swilling pig.

Roger Nichols VK7ARN

The ride was on June 20 in the delightful country between Pyengana and Goshen, west of St Helens. The weather held up well for setting up and the ride itself. Overnight conditions on Friday and Saturday included thick fog and very heavy downpours.

Four WICEN vehicles with two trailers left from the rendezvous in Snug at 0900 on Friday morning and headed up the Channel, Midlands, Esk and Tasman highways, with a brief stop in Campbell Town for coffee, nibbles and requisite discharges. Also, a brief encounter with Rex VK7MO en route to Mt Barrow.

In St Helens, Chris FCDW with XYL Liz and NXX with XYL Bev checked into their motel before continuing on. VK7s ARN Roger, FMRS Michael, and JGD Garry headed on to Pyengana to begin the set up. VK7s FAME Steve and FRAE Rhonda had to work on the Friday so joined us late in the evening after a long, dark and foggy drive – you can see Rhonda and Steve in Photo 2.

The endurance ride was organised by Portland Endurance Riders, a small local club. Its six committee members were surprised but delighted with the record number of entries for the event, which included 40 and 80 kilometre rides, reference Photo 3.

Our involvement came about by a chance encounter in St Helens by the club Secretary Tara Nicklason and an occasional WICEN member 'Tiny' Damien ex VK7LDA. The club had experienced difficulties in maintaining communications between base and checkpoints and were looking for surety of communications. Damien suggested WICEN and exchanges of emails brought us to Pyengana.

RadioMobile software indicated we could do the job with a repeater on an easily accessible hill top approximately central to the rides. Peter VK7TPE and Chris VK7FCDW were working on Targa Tasmania in April so, by arrangement with Ron VK7ZRO, Peter and Chris were deployed so as to be close to Pyengana.

They met up with Tara and did a quick survey to confirm the RadioMobile results. As it turned out, the difficult checkpoint near Goshen was later relocated enabling simplex communications. During the Targa site meeting, Chris had mentioned APRS tracking capability which was quickly accepted by Tara. This would definitely need a temporary digipeater so the planned repeater location became an additional checkpoint and digipeater site.

On arrival at the ride base at the Pyengana recreation ground we found truly luxurious conditions awaited. Our base was in the hall, with running water, ablutions and, later, a Lions Club run cafeteria.

Our friend Ossie Owens, President of our usual 'client' ride club, Southern Tasmanian Endurance Riders, (STER), was there and made it clear that we

The equipment used

Base and APRS radio	**Kenwood D710A, Diamond X-50 on a 12 metre telescopic trailer mounted mast.**
Base APRS monitoring	**The D710A coupled to a notebook PC running AGW Packet Engine Pro and AGW Tracker.**
Checkpoints	**Various two metre rigs.**
APRS portable	**Puxing 777, TinyTrak III Plus, DeLuo SiRF III GPS in the outer of a hydration back-pack.**
APRS digipeater	**PRM8025, PacCom Tiny 2 TNC, Diamond X-30 on a tripod mount mast.**
Supplied for ride organiser use	**VHF high band PRMs mounted in cases with magnetic base whips (non amateur licensed by WICEN).**

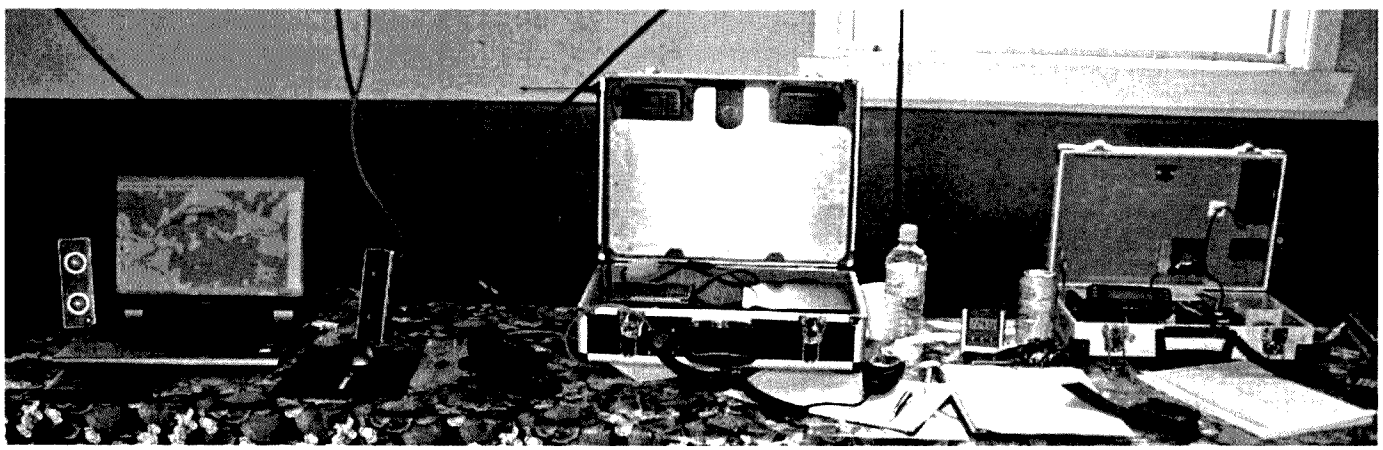


Photo 1 Equipment in use at the base location.

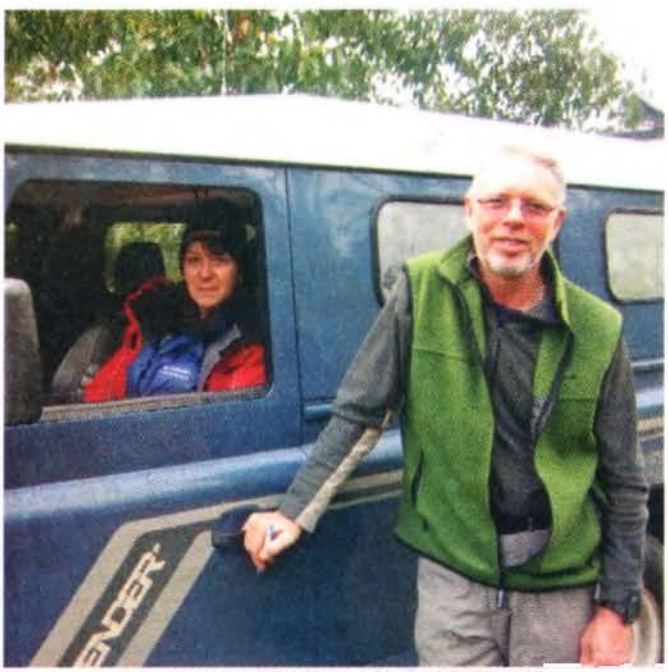
such housing and other conditions on STER rides!

Three base units were established; APRS, checkpoints and ride organisers. Equipment used at the base may be seen in Photo 1. APRS and checkpoints shared a dual band radio and antenna on a 12 metre mast.

A third network was set up, on a WICEN licensed commercial frequency, for ride organisers and utilising a magnetic base whip on the community centre roof. Garry VK7JGD and Michael VK7FRMS went off up the hill to check simplex communications and to establish the APRS digipeater which was left on site overnight to monitor our movements and to look out for the late arrivals coming up from Hobart.

The site had a good path to VK7RAA on Mt Barrow. Steve and Rhonda's track was covered all the way from Hobart via RAD, REC, RAA and our temporary digipeater. An unusual occurrence as 'trackees' normally drop of the edge of the APRS world when descending to the coast from St Marys.

Satisfied all was in order, Stu, Bev, Chris and Liz went to the nearby Pub in the Paddock, famous for its beer drinking pig, for a counter meal before returning to St Helens for the night. Garry, Michael and Roger prepared their own meals at the Base and awaited Steve and Rhonda's arrival before all retiring for the night in the backs of respective vehicles and, in Roger's case, a tent.



Rhonda VK7FRAE and Steve VK7FAME

All were ready for action by 07:00 on Saturday morning. Chris, Michael, Steve and Rhonda headed bush to the checkpoints and digipeater locations. Stu and Roger manned the base. All went pretty well according to plan. The only remedial actions required being battery related at the digipeater and a battery changeover for the portable tracker unit.

Steve and Rhonda's checkpoint role was the first to be completed enabling them to head off back home to Snug. Michael was delayed organising a float for a lame horse which had been walked into his checkpoint, but once sorted was also able to head south to Cradoc. Garry stayed on, though his checkpoint duties were completed, to enable the digipeater to stay in action until its carrier had returned to direct contact with base.

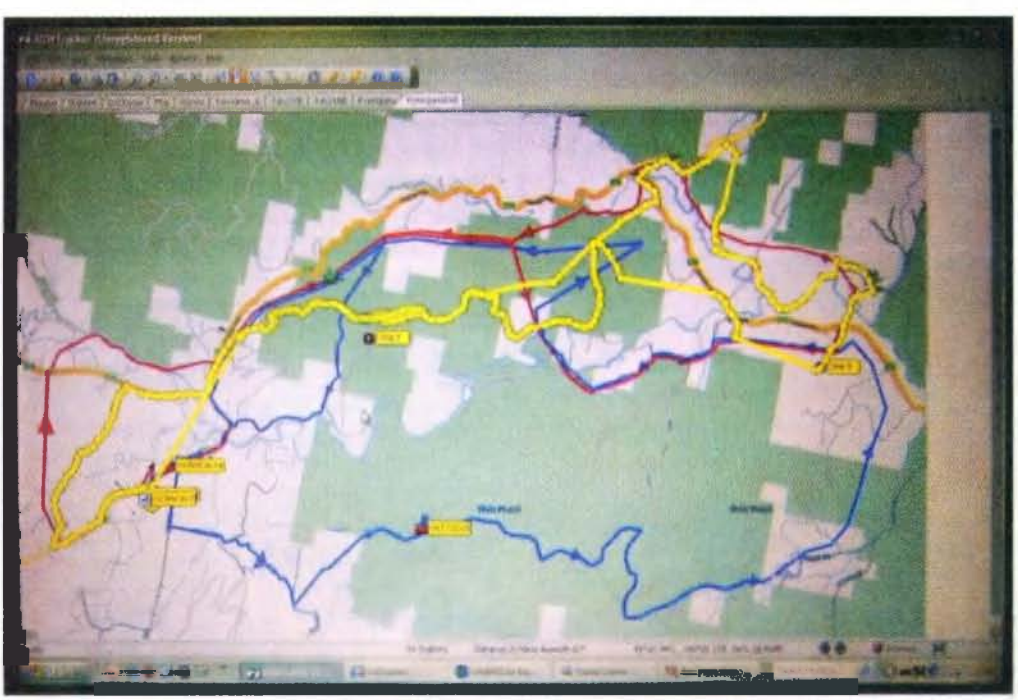
We were keen to completely and accurately map the course via the APRS track, especially given that the original course maps were very much of the 'sketch' variety.

When the beacons were being heard directly, Garry returned to Base, the antenna switched to a magnetic base dual band and the 12 metre mast lowered, packed up and hitched to Garry's vehicle for his return to Snug.

When the tailenders arrived back at Base, Stu, Chris and Roger packed up the gear and prepared for the feast laid on by the Club for the riders, strappers, other supporters and the workers, including us. Bev and Liz were ferried from St Helens to join us for the lamb spit roast, potatoes and a selection from the 12 metre long table of side dishes. This followed by the same table now filled with Pavlovas and other goodies. Prizes were presented before all returned to various accommodations for a very wet and noisy night (for clarification - rainfall caused!).

The residual WICEN group returned, or more correctly grazed its way, to the south via the east coast with eggs and bacon in St Helens, and sushi and Devonshire Tea at Kabuki by the Sea. All in all, a very enjoyable weekend and, most importantly, a very satisfied 'client'. Our adoption of the ARRL's slogan *'When All Else Fails – Amateur Radio Works'* was justified!

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A screen image showing the endurance ride APRS tracks.

Contests

Craig Edwards VK8PDX (ex VK5HRT)
vk8pdx@yahoo.com.au
PO Box 285, Alice Springs NT 0870

Contest Calendar for October—November 2009

October	**3/4**	**OCEANIA DX CONTEST**	**SSB**
	9	10/10 International Day Sprint	CW/Phone
	10/11	**OCEANIA DX CONTEST**	**CW**
	17/18	Worked All Germany	CW/SSB
	17/18	JARTS Worldwide RTTY	RTTY
	17/18	50 MHz Sprint	All
	18	Asia Pacific Sprint	CW
	24/25	**CQWW DX Contest**	**SSB**
	24/25	ARRL International EME Competition	All
November	7/8	Ukrainian DX Contest	SSB/CW
	8	Straight Key Weekend Sprintathon	CW
	14/15	Worked All Europe	RTTY
	14/15	Japan International DX Contest	SSB
	14/15	OK-OM Contest	CW
	21/22	Bulgarian DX Contest	SSB/CW
	28/29	**CQWW DX Contest**	**CW**
	28/29	**Spring VHF/UHF Field Day**	**CW/Phone**

I hope everyone enjoyed or will enjoy the SSB and/or CW Oceania Contests. Whether you just give out a few QSOs on a Sunday afternoon or set aside the whole weekend to compete, it should be a lot of fun and who knows we might even have a sunspot or two by now..... yes I know, I know, let us not get too far ahead of ourselves.

After being in Alice Springs for two months an antenna upgrade has finally occurred. Instead of just having a multi band vertical, the backyard has been further adorned with a 3 element 20 m monoband Yagi.

This was completed the day before the Remembrance Day contest thanks to the help of Kev VK4KKD who personally delivered the newly purchased 'One Man Tower' that is mounted on a trailer. So for the rest of the year I can see myself entering most contests in the Single Operator Single Band categories on 20 m.

The Big One

CQ World Wide

Imagine combining the anticipation and excitement of the Bathurst V8 race, Melbourne Cup, AFL and NRL grand finals all into one event and turning it into an amateur radio contest?

Well imagine no more my friends because it happens in the form of the CQ World Wide Contest. The CQ WW SSB event occurs this month on October 24 and 25 and runs for 48 hours. It is an exciting weekend with many rare and semi-rare DXCC activations to chase.

It is also one of those weekends where those bands that have been very quiet come to life, yes 15 and 10 metres, I am talking about you too.

Those operators with even the most modest stations can finish the weekend with pockets full of new DXCC entities, band countries, CQ zones, WPX prefixes, US states, JCC/JCG numbers or whatever else takes your fancy. So lock the doors, tell your friends and work mates you are sick, spend plenty of quality time with your family during the week because you will want them to leave you alone on Saturday and Sunday.

Stock up on meals and snacks that require virtually no cooking, unless you have a family member who is willing to do 48 hour room service.....yep, better stock up on those snack foods. If you can fit an air mattress in your shack then do it. I think a semi-uncomfortable sleeping situation helps you out of bed easier for that early wake up call and you do not disturb your partner when you set the alarm at 2 am, then 3 am, then 4 am and then 5 am to check if 40 m or 80 m is open!

Remember how I suggested telling your friends and workmates that you are ill, not only is that a great excuse to get out of social events for that weekend, it also lends itself to throwing a sick day on

Monday to recover from 48 hours of very little and often interrupted sleep. And once you have recovered and have sent off all those QSL cards, before you know it, the CQ WW CW event will be on your doorstep on November 28 and 29.

The official website of the CQ WW is www.cqww.com/ and a pdf of the rules can be obtained at www.cq-amateur-radio.com/cqwwhome.html

CQWW controversy

Last year's CQ WW SSB and CW contests have been rocked by some high profile disqualifications and hefty penalties. This has been covered by the excellent website www.radio-sport.net

Some of the headline stories covered by Jamie Dupree NS3T are "Five DQ's in 2008 CQ WW SSB test", "More DQ news likely in '08 CQ WW CW", "CQ WW gives cheats one year ban", "CQ WW expands in-test check rule" and "CQ WW chief fires back on cheats".

Remember that the return of logs is what determines the viability of any contest

By the time you receive *AR*, I am sure Jamie would have added more news items leading up to CQ WW SSB and CW. So for a rundown of the 2008 disqualifications, the multi-year bans and 2009 rule changes please visit the Radio-Sport website for all the controversies and fall-out of the past couple of months.

VK/Trans Tasman 80 m and 160 m Contest 2009 Results

The dynamic duo of VK7VH Vince Henderson and Ray Smith are winners of the VK/Trans Tasman 80 m Trophy. 252 stations participated in the 2009 Trans Tasman 80 m contest and 61 entries were received.

This was down from last year's 301 stations and 87 entries. All call areas from VK1 to VK7 and ZL1 to ZL 4 joined in on the fun. There were no VK8 participants but I can assure the organisers that will change for 2010 as you will hear VK8PDX giving everyone a shout. This decrease in VK and ZL logs was a disappointment, but it was encouraging to see the high percentage of participants working in all six hours of the contest.

There were excellent conditions on 80 m and many VKs reported booming signals from New Zealand. In VK5 I was not hearing the booming ZLs but the QSOs to our friends across the pond did occur in each hour block which was encouraging. The contest organiser Bruce VK3JWZ reported the VKCL contest logging program worked flawlessly. As with all contests, participants are urged to send in their logs, no matter how big or small your numbers are.

Remember that the return of logs is what determines the viability of any contest and the Trans Tasman is no exception.

The Frankston and Mornington Peninsular Amateur Radio Club (VK3FRC) are winners of the VK/Trans Tasman 160 m Trophy. The team comprising Roy Seabridge VK3GB, David McAulay VK3EW and the rest of the crew won with 1943 points over a closely fought dive for the finish line between VK4ZD (1715), VK7VH (1711) and VK2AWX (1693). The 160 m contest had 158 stations participating with 42 logs received.

Last year there were 168 participants with 52 logs. Again competitors reported low noise and excellent Trans Tasman propagation. The contest organiser reported there was a lack of VK5, VK6, VK8 and ZL participation but the wonderful conditions and increase in VK7s was a highlight.

I certainly enjoyed my first Trans Tasman on 80 m this year and I will definitely be back to give the much sought after VK8 prefix.

Although after my experience with the 2009 NZART Memorial contest, I know that consistently making it across the Tasman will be a struggle – but that is all part of the fun and the challenge. Top 3 place getters in each category are listed here and the full results are on the WIA website at www.wia.org.au/members/contests/transtasman/. Well done to Bruce Renn VK3JWZ for all his hard work.

80 m Phone Overall

VK7VH	2801 points
VK4ZD	2503 points
VK3FRC	2330 points

80 m Phone QRP

VK3IO	1418 points
VK2IG	1209 points
VK2WJD	1146 points

80 m Phone Foundation Licence

VK2FAJA	870 points
VK2FMAM	663 points
VK2FNIT	549 points

80 m Phone Multi-Operator

VK7VH	2801 points
VK3FRC	2330 points
VK2AWX	2252 points

80 m Phone 1st ZL

ZL4AL	1771 points

160 m Phone Overall

VK3FRC	1943 points
VK4ZD	1715 points
VK7VH	1711 points

160 m Phone QRP

ZL2AYZ	541 points
VK4ATH	259 points
VK3ZGP	85 points

160 m Phone Multi-Operator

VK3FRC	1943 points
VK7VH	1711 points
VK2AWX	1693 points

160 m Phone 1st ZL

ZL4R	1264 points

Winter VHF/UHF Field Day 2009 Results

Results of the Winter Field Day are in and the top 3 in each category are listed here. For full results visit www.wia.org.au/members/contests/vhfuhf/ The Spring Field Day will be held on November 28 and 29.

Single Operator – 24 hours

VK4OE	2418 points
VK3DAG	1524 points
VK4ALH	1397 points

Single Operator – 8 hours

VK5ZT	1217 points
VK3HY	1159 points
VK5AGZ	823 points

Multi Operator – 24 hours

VK5LZ	1244 points
VK4WIE	1118 points

Multi Operator – 8 hours

VK3XPD	1849 points
VK5LZ	1244 points
VK3AWS	646 points

Home Station – 24 hours

VK3OE	1222 points
VK3WT	1123 points
VK3VFO	998 points

Harry Angel Sprint 2009 Results

Contest Manager Ian Godsil VK3JS received 33 logs but reminded us that some of those who participated but did not submit a log could have earned a certificate if they had sent theirs in.

The CW section continued to receive support and the VKCL contest logging program again proved to be winner for both the contesters and the contest manager alike.

The contest manager was pleased by the increased participation of YLs and how the F-calls continue to support another local contest. Ian emphasise that although the late Harry Angel was a VK4, it should not mean that only VK4 operators should be the main group involved. There is room for a wider selection from central and western states.

CW

VK3IO	34 points
VK2GWB	32 points
VK4BZ	30 points
VK2PN	28 points
VK2BHO	26 points
VK2BJT	24 points
VK3TX	22 points
VK2AVQ	20 points
VK2CTN	14 points

SSB

VK4RC	62 points
VK4YZ	59 points
VK4PTO	56 points
VK4VCH	48 points
VK4TAA	47 points
VK2ZCM	46 points
VK4EA	41 points
VK4DGS	41 points
VK2BV	41 points
VK4IM	38 points
VK4KET	35 points
VK4DC	35 points
VK2LET	31 points
VK4JRO	26 points
VK7JGD	25 points
VK4MON	24 points
VK2HBG	23 points
VK3PDG	22 points
VK4ION	21 points
VK2FGJW	16 points
VK4AU	13 points

Mixed

VK4XY	64 points
VK2IG/QRP	41 points
VK4EV	24 points

QRP Hours Contest 2009 Results

CW

VK3GDM	10 points
VK3JS	9 points
VK1ACE	8 points
VK3JY	8 points

SSB

VK2TEZ	14 points
VK7JGD	13 points
VK2ASU	8 points

Mixed

VK4SN	31 points
VK4XY	25 points
VK3WF	18 points

CW practice for contests

How did you go in the WAE CW contest? If you had trouble with the QTCs, Phil VK4BAA has sent in a great tip. How about visiting the Learn CW Online website at http://lcwo.net/ There is a training program available for receiving QTCs and it is a browser-based environment to learn and practice Morse code. It is great to hear from Phil, I knew you could not stay away from us for too long, hi hi!

2010 World Radiosport Team Championships

With the 2010 WRTC event 9 months away you will find their website starting to come alive with regular updates and news items. The WRTC will occur in conjunction with next years IARU HF World Championships contest in July. So it is worth taking a regular peek at www.wrtc2010.ru/

Worked All Europe DX Contest 2008 – how the VKs went

Congratulations to the following category winners of last year's events:

CW VK2	VK2GR	184 points
CW VK4	VK4TT	240 points
CW VK8	VK8AV	1131 points
SSB VK2	VK2GWK	1092 points
SSB VK3	VK3TZ	5670 points
RTTY VK5	VK5NPR	161590 points
RTTY VK7	VK7AD	250 points

Spring VHF-UHF Field Day 2009

Contest manager: John Martin VK3KM

Saturday and Sunday 28 and 29 November 2009.

Duration in all call areas other than VK6: 0100 UTC Saturday to 0100 UTC Sunday.

Duration in VK6 only: 0400 UTC Saturday to 0400 UTC Sunday.

Please note that there is now a 3 hour difference between the eastern states and Western Australia, because daylight saving time no longer applies in WA.

Sections

A: **Portable station, single operator, 24 hours.**

B: **Portable station, single operator, 8 hours.**

C: **Portable station, multiple operator, 24 hours.**

D: **Portable station, multiple operator, 8 hours.**

E: **Home station, 24 hours.**

Entrants may enter more than one section.

Operating periods: Stations entering the 8 hour sections may operate for more than 8 hours, and select which 8 hour period they wish to claim for scoring purposes. If a station operates for more than 8 hours, it may enter both the 24 hour and 8 hour sections. If the winner of the 24 hour section has also entered the corresponding 8 hour section, his log will be excluded from the 8 hour section.

Two operators: If two operators set up a joint station with shared equipment, they may choose to enter Section A or B as separate stations under their own callsigns, or Section C or D under a single callsign. If they enter Section A or B, they may not claim contacts with each other.

Multi-operator stations: Stations with more than two operators must enter Section C or D. Operators of stations in Section C or D may not make contest exchanges using callsigns other than the club or group callsign.

General Rules

One callsign per station. Operation

Continued at foot of page 45

DX - NEWS & VIEWS.

John Bazley VK4OQ,
E-Mail: john.bazley@bigpond.com

Yemen 2000 comes good

The ARRL DXCC Desk announcement that 7O1YGF will now be accepted for DXCC credit certainly generated a lot of interest! In April 2000 a **German led DXpedition to the Yemen, 7O1YGF,** created a considerable amount of activity, for there were many DXers that needed the Yemen for an all time new one. The operation shut down abruptly and then struggled for approval by Newington for DXCC credit.

The 7O1YGF (Yemen-German-Friendship) DXpedition made some 35,000 QSOs in just less than 10 days by a team that included DK9KX, DK1II, DL5EBE and DJ7MG (who passed away several years ago).

To quote from the recent official announcement by Bill Moore NC1L:

After reviewing recently-received information regarding the 7O1YGF operation, and after additional dialogue with a leader of the DXpedition, the DXCC desk has approved this operation.

Considering the length of time that has passed since this operation, we ask that DXCC participants who would like to claim credit for 7O1YGF follow the options below:

Send the 7O1YGF card ONLY to DXCC with a SASE, or return postage if outside the US; DXCC will process the card and applicants will not be charged a submission fee. 7O1YGF cards included with other cards will be handled as part of a normal submission. Bring the card to a DXCC Card Checker. The card checker will forward the confirmation to the DXCC desk for processing. Again, there will be no submission fee if this is a single-card submission. You must fill out an application form, however.

In all other cases, applicants can include their QSL card with their next submission, and it will be handled normally. We will work with the 7O1YGF team to use Logbook of the World if possible.

Remember, the cut-off date for the 2009 DXCC Annual listing and Honour Roll list is December 31, 2009. We encourage applicants to handle this sooner rather than wait until the last minute.

Those who still need a paper QSL card for 7O1YGF can send their request to DJ3XD (he was the original QSL manager for CW QSOs, but now he will handle SSB and RTTY as well). The logs are expected to be uploaded to LoTW shortly.

Frank Donovan W3LPL informed The Daily DX News Letter that the Thursday July 16th 2009 edition of The Daily Herald (an online news source based out of Philipsburg, St. Maarten) is reporting that "**St. Maarten (PJ7)** and **Curacao (PJ2)** are destined to become countries within the Dutch Kingdom by October 2010 as long as the criteria set by the Dutch government are met". The expected date is October 10th or "10/10/10". The Netherlands Antilles, which currently includes Curacao (PJ2), Bonaire (PJ4), St. Maarten (PJ7), Saba (PJ6) and St. Eustatius (PJ5), would then "cease to exist" as both St. Maarten and Curacao would become two new countries "in the Dutch Kingdom" with the "Dutch public entities - Bonaire, St. Eustatius and Saba (BES Islands)" emerging.

The dates and call signs for the IOTA DXpedition to **Papua New Guinea** will be as follows:

22nd to 26th October: P29VCX Tanga Islands (OC-102) QSL via SM6CVX

27th to 31st October: P29VLR Green Islands (OC-231) QSL via SM6CVX

2nd to 9th November: P29NI Woodlark group (OC-205) QSL via G3KHZ

The operators will be Luis CT1AGF, Derek G3KHZ, Gordon G3USR, David M0VTG and Hans SM6CVX. They plan to be active on 160 m to10 m CW, SSB and RTTY. While the main team will leave for home after operating from OC-205, Hans SM6CVX plans to continue the trip. He would like to go and operate as P29VCX from the **D'Entrecasteaux Islands (OC-116)** on 11 to 13 November. QSL via home call.

Karl DL2FAG is heading to the Pacific for a three island holiday style operation lasting six weeks.

First stop will be on **Niue Island** where he will be QRV from October 19th to November 17th. He has already received his ZK2DL licence from the Telecommunications Department of Niue. Plans are to use an IC-7000 and triple leg multiband antenna and dipoles for activity on 3.5 through 28 MHz mostly on RTTY, PSK and SSB. His next stop will be from **New Zealand's South Island** for activity as ZL4/DL2FAG from November 8th to 18th with expected QRV on 7 through 28 MHz on RTTY, PSK and SSB.

Karl's final stop will be on Samoa where he will be QRV from November 17th to 30th again on SSB, RTTY and PSK on 3.5 through 28 MHz. He has already received his 5W0KH licence from the Office of the Regulator in Apia. Karl has a Website with details and a log search for his upcoming ZK2, ZL4 and 5W0 trip at www.qsl.net/dl2fag QSL via DL2FAG.

XR0YA is the callsign issued for the DXpedition to **Easter Island** (SA-001) which will take place between 31st October and 15th November .The six team members, Marco CE6TBN, Leszek NI1L, Art PA3C, Zbig SP7HOV, Stan SQ8X and Victoria SV2KBS have been granted permission to operate on all bands, and they plan to focus on 160, 80, 40 and above all 30 metres (CW only, as digital modes on 30 m are not allowed). Working Europe on 30 metres will be their priority during the first week on the island. XR0YA will have three stations with two amplifiers and several antennas. Although SSB will not be neglected, CW will be the main operating mode, with some RTTY being planned as well. QSL route TBA. Further information can be found on the DXpedition web site (http://rapanui2009.org/).

Stan EI6DX (UA1OUT) will operate as 6W/EI6DX from **Senegal** from 7th to 16th November. He will concentrate on the low bands using CW, and will take part in the Ukrainian DX and Japan International DX contests. QSL via RX3RC, direct or bureau. Updates and further information will be at http://www.ei6dx.com/senegal

Allan Mason VK2GR (H44MA, ZK1GGR) will be working for Australian Doctors International (www.adi.org.au) on an assignment in **Kiunga (QI03pv), Western Province, Papua New Guinea** between September and December 2009.

He will be QRV in his spare time as P29CW.

This is a re-issued call as the previous owner was Peter Linden VK3AMX/WA7VDF, who was tragically killed in a plane crash in 1996. "Due to the availability of power, P29CW will not be active on the many field trips during this period of operation", says Allan. QSL cards should be sent direct only to VK2IR with either three US green stamps or one new IRC.

C6APR will be active from the **Bahamas** in the CQWW SSB 2009. Operators will be W2GJ, K3IXD, W3PP and K4QO, from "Crooked Island Lodge." Look for them from October 22nd to 26th and QSL via K3IXD.

Chris Megaw 4W6FR in **Dili, East Timor**, is now half way through his stay there and still getting on the air whenever he can. He favours 20 m PSK31 although he has had success in keeping skeds with weak stations using the "Olivia" digital mode. He tries to get on the ANZA Net on 14183 at 0515 Z daily, whenever his work permits.

Jacek SP5EAQ (3D2MJ) and Jacek SP5DRH (3D2KJ) will be active from **Viti Levu (OC-016), Fiji**, from 1st October for four weeks. They will operate on all bands, with an emphasis on the low bands. The two stations will be using small amplifiers and vertical antennas. QSL via home calls.

Lot DJ9ZG and Babs DL7AFS will be active as J79ZG from **Dominica (NA-101)** from 27th September to 15th October. They plan to operate RTTY, PSK and SSB on 80 to 6 metres. QSL via DL7AFS, direct or bureau. Their website is at www.qsl.net/dl7afs

The October 19th DXpedition to **Sable Island** by N0TG, AA4VK and WA4DAN is "being placed on hold" as N0TG's son, Carter, is ill. The web site, www.CY0dxpedition.com, is being left up and updates on Carter's progress will be added from time to time, as well as plans to reschedule the CY0 operation.

MM0DWF/DL9LB, Lars, tells us he is indeed going back to **South Georgia** again. He will be arriving "around the second week of October" and leaving in mid-November. This is all dependent on the weather. Lars will be working on the island and plans to operate as VP8DIF as time permits. More information can be found on his Web page at www.lars-boehme.de/vp8dif/index.html QSL via DJ9ZB.

Good luck in the pile-ups until next month.

Special thanks to the authors of *The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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Continued from page 43

Spring VHF-UHF Field Day 2009

may be from any location. A station is portable only if all of its equipment is transported to a place which is not the normal location of any amateur station. Stations may change location during the Field Day provided the station is dismantled and reassembled each time it moves. You may work stations within your own locator square. Repeater, satellite and crossband contacts are not permitted.

No contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for contest activity. Suggested procedure is to call on .150 on each band, and QSY up to make the contest exchange.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator. The Maidenhead locator is optional if it has already been exchanged in a previous contact during the Field Day and neither station has moved since then.

Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new location in a different locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Logs

Logs should cover the entire operating period and include the following for each contact: UTC time; frequency; station worked; serial numbers and locator numbers exchanged.

Scoring

For each band, score 10 points for each locator square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Cover Sheet

The cover sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section(s) entered; the scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Please use the format at foot of page for your scoring table. In this example the operator has operated from one locator and worked four locators on each band:

A blank cover sheet, with scoring table, is available on the Field Day page of the WIA web site.

Entries

Paper logs may be posted to the Manager, VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to vhf-contests@wia.org.au Acceptable log formats include: ASCII text, RTF, DOC, XLS, MDB, or any Open Office format.

Logs must be received by

Monday, 14 December 2009

Early logs would be appreciated.

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Band	Locators Activated (10 points each)	+	Locators Worked (10 points each)	+	QSOs (1 point each)	x	Multi-plier	=	Band Total
6 m	10	+	40	+	40	x	1	=	90
2 m	10	+	40	+	30	x	3	=	240
70 cm	10	+	40	+	20	x	5	=	350
etc.									
Overall Total									= 680

Latest DXCC standings

Eddie DeYoung VK4AN
WIA Awards Manager & Awards Committee Chairman
awards@wia.org.au vk4an@wia.org.au

Notes to reading the lists

Multi-band entries are also included, as well as previously deleted (non-WIA members) listings. This is per the agreement of the Awards Committee.

"SK" calls have been deleted.

The numbers for the general DXCC entries indicate the number of current DXCC countries and the second number includes deleted countries.

Anyone who feels there is an error in the listing should contact me via awards@wia.org.au

CALLSIGN	COUNTRIES
DXCC Ex. (338) Phone	
VK4LC	338/384
VK5WO	338/371
VK6LK	338/363
VK3QI	338/352
VK3AKK	338/351
VK2FGI	338/343
Honour Roll (329) Phone	
VE6VK	337/374
VK6NE	337/353
VK3DYL	337/343
VK3SX	337/343
VK2FGI	337/343
VK4UA	336/371
VK6HD	336/362
VK5MS	335/389
VK7YP	336/341
VK3AMK	335/354
VK3EW	335/341
VK3TZ	335/339
VK3OT	334/345
VK1ZL	334/338
VK2AVZ	333/344
VK2DEJ	333/339
VK6APK	333/338
VK4AAR	331/335
VK3EUZ	329/330
General listing - Phone	
VK3YJ	327/333
VK6ABS	327/327
VK5FV	326/329
VK4SJ	326/327
VK2UK	325/330
VK2HV	322/322
VK4LV	320/322
VK6LC	318/320
VK6RO	314/320
VK4EJ	309/311
DL2AWG	309/309
PY2DBU	308/315
VK4AN	307/314
VK4ICU	303/305
VK4QO	301/306
VK3KE	300/303
VK3PA	298/299
VK2CA	297/297
JA3EY	296/300
DL1TC	294/295
VK3DU	292/301
VK2CSZ	290/293
VK6IR	289/289
VK6ANC	287/291
VK4BAY	287/290
VK7TS	285/286
VK3JMB	285/285
VK6DU	281/284
VK3UY	264/266
JA7MGP	260/260
VK2XH	257/257
DL3ASJ	256/256
VK8NSB	255/255
VK3CIM	254/258
VK8DK	253/254
DL6MRS	252/252
VK2AU	250/250
VK2FHN	246/246
VK4AO	240/240
VR2XMT	235/235
VK2RO	231/233
VK4DMP	227/228
UA6LDD	225/226
DL6USA	210/210
VK3DVT	206/209
VK6RZ	203/206
VK7JAB	198/198
VK2EJK	195/195
VK2EO	195/195
9A2KL	172/175
VK6EH	170/170
VK2BQS	166/169
DL9UBF	165/165
VK5EMI	160/160
VK7LUV	160/160
SV1EOS	157/157
JA6KTY	156/156
VK6HZ	151/151
VK2SPS	143/145
AX4EJ	141/141
VK2QV	141/141
VK3JXO	141/141
VK3DQ	138/152
VK8LC	138/138
VK5ATU	136/139
OK1ZSV	136/136
VK4FNQ	134/134
VK2KCD	133/133
SV1XV	130/131
WA5UA	128/128
VK4VIS	127/129
VK2HOT	125/125
CU3AAT	125/125
VK2MWG	125/125
SV1UT	123/123
VK2VZQ	122/122
VK4EZ	119/125
VK5UO	112/115
VK3CML	109/109
XV2LC	109/109
VK9RS	107/107
VK6ISL	106/106
8Q7LC	105/105
VK4XES	104/104
VK3HGN	103/103
SV1GYG	102/102
SV1FTY	102/102
VK4TJF	101/101
VK2VEL	101/101
VK6ZAI	100/100
VK5JAZ	100/100
HS1NGR	100/100
DXCC Ex. (338) CW	
No claims	
Honour Roll (329) CW	
VK3QI	337/349
VK6HD	336/357
VK5WO	336/352
VE6VK	333/360
General listing - CW	
VK6RZ	324/329
VK3AKK	320/325
DL7VMM	315/315
VK4XA	306/333
VK4AN	304/310
VK4LV	301/308
VK6AJ	292/304
VK2CWS	245/247
VK3DQ	243/270
VK3KE	238/238
VK3CIM	235/236
RD3AF	233/233
VK6RO	231/233
VK6DU	230/232
VK7TS	219/219
VK3PA	215/216
DL6USA	207/207
VK2AR	206/211
DL7PA	203/203
VK2GR	181/188
PY2DBU	181/183
VK4CXQ	174/174
VK5UO	171/172
SP9ADV	168/171
DK6AP	168/168
VK6LC	157/157
VK4UA	151/164
VK4AAR	145/147
DL1TC	133/133
DL6UGF	126/126
DJ4BG	121/121
DF6NS	120/120
VK2CA	115/115
VK5BWW	110/113
T94VT	108/108
VK4EJ	108/108
9A2KL	103/103
DL3GDS	102/102
VK5ATU	100/102
DXCC Ex. (338) Open	
VK4LC	338/384
VK5WO	338/375
VK3QI	338/353
VK3OT	338/352
VK3AKK	338/351

CALLSIGN	COUNTRIES
Honour Roll (329) Open	
VE6VK	337/382
VK6HD	337/364
VK3SX	337/343
VK4UA	336/373
VK3AMK	335/354
VK3EW	335/341
VK6APK	335/340
VK3OT	334/348
VK2AVZ	333/344
VK4AAR	333/337
VK3UY	333/336
VK6RZ	330/336
VK4AN	329/337
General listing - Open	
PY2DBU	328/343
VK6RO	328/334
VK2HV	327/327
VK2UK	326/331
VK4LV	325/333
VK6LC	318/320
VK4DV	317/331
VK6DU	314/317
VK4ICU	311/313
VK3KE	306/309
VK3PA	304/305
DL1TC	302/303
VK2CA	301/301
VK7TS	295/296
PY2DBU	294/298
VK6IR	294/294
VK3JMB	288/288
9A2KL	280/283
UA6LDD	279/280
VK6MK	256/259
VK8NSB	256/256
VK3DQ	255/284
VK5UO	251/255
VK2CWS	251/253
DL6USA	250/250
VK2FHN	249/249
VK2AR	215/220
DL9UBF	206/208
SP9ADV	200/203
VK2BQS	183/186
VK2GR	184/191
VK4CXQ	179/179
VK5ATU	171/174
VK4DC	168/168
DL6UGF	161/161
SV1EOS	161/161
VK3VB	153/155
VK6HZ	151/151
VK3JXO	146/146
VK2SPS	144/145

CALLSIGN	COUNTRIES
SV1XV	142/144
VK4EZ	140/147
ON5SPA	127/127
VK2WL	124/126
VK7CQ	123/125
VK5DC	117/118
N0MSB	117/117
VK2AJE	109/109
VK2VEL	109/109
UA0IGV	103/103
VK2AWD	102/106
VK5CO	100/106
VK5GX	100/101
VK1AI	100/100
RA3BZ	100/100
DL1APX	100/100
General listing - Data	
VK3EBP	253/255
VK3KE	210/210
VK3AMK	200/202
VK4AN	160/160
VK2BQS	126/128
DL4ARJ	120/120
ON5SPA	111/120
VK6DU	103/103
VK5RY	100/102
Gen-listing - 6m	
VR2XMT	154/154
VK4FNQ	141/141
VK4ABW	109/109
VK6JQ	103/104
VK4CXQ	101/101
Gen-listing - Satellite	
VR2XMT	112/114
VK3XDQ	106/106
General listing - SWL	
VK5-398738	125/125
DE2DAD	100/100
3B DXCC - OPEN	
VK4AN	814
PY2DBU	662
VK3KE	599

CALLSIGN	COUNTRIES
3B DXCC - PHONE	
VK6LC	598
VK3DYL	577
VK2CA	547
VK4QO	538
VK2DEJ	536
VR2XMT	461
3B DXCC - CW	
VK3PA	364
5B Classic DXCC - OPEN	
VK6HD	1605
VK4AN	1167
VK6LC	955
VK5WO	920
UA6LDD	907
VK3TZ	898
5B Premier DXCC - OPEN	
VK4AN	1132
VK3EW	974
PY2DBU	891
VK3KE	821
5B Classic DXCC - PHONE	
VK3EW	1489
VK3PA	957
5B Premier DXCC - PHONE	
VK2CA	810
5B Classic DXCC - CW	
No claims	
5B Premier DXCC - CW	
No claims	
7B DXCC - PHONE	
No claims	
7B DXCC - OPEN	
VK4AN	1463
VK5WO	1135
7B DXCC - CW	
No claims	
9B DXCC - OPEN	
VK6HD	2737
VK3QI	2520
VK3EW	2214

Rare, remote, restricted and really sought after

A recent survey by Dx World of Ham Radio retuned the following locations as the 50 most wanted DXCC entities.

Some are remote, others are restricted and several are remote and restricted.

The list is in order of 'most sought after.'

	DX Entity
1.	North Korea
2.	Yemen
3.	Navassa
4.	Glorioso
5.	Marion I
6.	Amsterdam I
7.	Heard I
8.	Bouvet
9.	Crozet
10.	S.Orkney
11.	S.Sandwich
12.	Malpelo
13.	Kingman Reef
14.	Auckland/Camp
15.	Midway
16.	Tromelin
17.	Macquarie
18.	Palmyra
19.	Conway Reef
20.	Juan de Nova
21.	Wake Island
22.	Chesterfield
23.	Scarborough Reef
24.	Pratas
25.	Baker & Howland
26.	Johnston Atoll
27.	St Peter & St Paul
28.	Mount Athos
29.	Eritrea
30.	Central Kiribati
31.	South Georgia
32.	San Felix
33.	Kure Atoll
34.	Trinidade
35.	Myanmar
36.	Mellish Reef
37.	Kermadec
38.	Kergeulen
39.	Tristan da Cunha
40.	Banaba
41.	Annobon
42.	Minami Torishima
43.	Temotu
44.	Tokelau
45.	Spratly
46.	Andaman
47.	Palestine
48.	Lakshadweep
49.	Willis Island
50.	Desecheo

News From

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

VK7

International Lighthouse Weekend in VK7

The weekend was a great success even though we had the "big blow" come through Sunday. Winston VK7EM at Mersey Bluff lighthouse was well equipped with separate antennas, on 80, 40, 20 metres and a squid pole vertical for 40 and 20 metres. Many contacts were made including Tanjung Gelang, in West Malaysia and the historic Point Fermin lighthouse in Los Angeles.

Wayne VK7FWAY and Eric VK7FEJE operated from the



Winston VK7EM at the Mersey Bluff Lighthouse
(photo courtesy of Winston)

Table Cape Lighthouse with a G5RV dipole and squid pole and also made many contacts. (see ILLW story page 29)

John VK7ZZ operated the Cape Bruny lighthouse and ended up using the lighthouse flag halyard to hold the squid pole vertical and made 29 contacts with other lighthouses including Malaysia, the U.S. and quite a few in N.Z.

Bill VK7MX, Peter VK7KPC, Duncan VK7FLAK and Yvonne, VK7FYMX all operated from the Low Head



John VK7ZZ at the Cape Bruny Lighthouse (photo courtesy of John)

Lighthouse on the mouth of the Tamar River and I think they may have had the best operating position in the old keeper's cottage.

HF squid pole verticals were the order of the day. Brin VK7FBAW over 2 m gave the early warning of severe weather. Many contacts were made and fun experienced despite testing the near vertical incidence skywave (NVIS) characteristics of the squid poles during the gales! Gavin VK7VTX operated from the Pot Boil Channel lighthouse on Flinders Island. The author made contact during the RD and he was being inundated with lighthouses and RD contacts and loving it!

Northern Tasmania Amateur Radio Club

Members of NTARC at a Special General Meeting on August 12 decided to incorporate and adopt a new set of rules. Thanks to Bill VK7MX for his work in developing the rules. At the end of proceedings the current President Allen VK7AN announced he was resigning and a great big thank you goes to Al for all his work with NTARC over the years.

Cradle Coast Amateur Radio Club (CCARC)

August saw CCARC run its first examination session and we welcome Steven VK7FXXX and Hamish VK7FHAM to the airwaves. Congratulations to our newest F-calls in VK7.

North West Tasmanian Amateur TeleVision Group

NWTATVG met for a social dinner meeting at the Bass & Flinders Restaurant in August and it was enjoyed by members and XYLs. A significant donation was made to the club at the meeting to assist the Club in promoting the hobby. A reminder that WIA National and VK7 Regional News broadcasts are now replayed on Sunday Nights at 7:30 pm on IRLP Nodes 6616 and 6124 via VK7RTV- 6 metres and 147.425 simplex.

WICEN Tasmania (South)

Over 14 - 15 August the WICEN crew were assisting with the safety checkpoint communications for the Horse Endurance Ride in Southern Tasmania. This event was held at Clifton Vale between Dysart and Elderslie. The survey was held on the Friday afternoon with the actual ride on Saturday with an early 6.45 am start!

Radio and Electronics Association of Southern Tasmania

It was great to catch up with Johnny Tan 9M8DB from Sarawak,visiting his daughters who are studying in VK7. Johnny is a regular on the SEAsiaNet and was on his way to GAREC in Japan. It was also great to catch-up with Paul K2PH who was visiting his son who is at UTAS. Paul attended the REAST September presentation which was a talk and video by Rex VK7MO and your author on the activities during World Moon Bounce Day in June at the Mt Pleasant 26 m Radio Telescope. Thanks also to Paul VK7FPAH who produced a beginner's guide to EME video around the activities on the day.

ar

David Giles VK5DG

Local Events and Launch Vehicles

This month there is news of a demonstration put on by AMSAT-VK members, a DXpedition for this summer, potential future launch opportunities, and updates on various satellites.

AMSAT-VK demonstration

The Blue Mountains Amateur Radio Club (BMARC) recently held their 'Winterfest' which AMSAT-VK was invited to attend. The event was held at the club's meeting rooms at Orchard Hills NSW and also featured other groups, e.g. ALARA and the Homebrewer's Group and various vendors.

The purpose of attending the Winterfest was to publicise the activities of AMSAT-VK with information handouts and a display of basic equipment for working the FM satellites. We were fortunate in that there was a good SO-50 pass at lunch-time and weather conditions were favourable.

Mal VK2MAL worked the satellite portable using a Kenwood TH-D7A full-duplex HT and an Arrow antenna. Mal also plugged in an old TV speaker to the HT so that spectators could hear the QSOs without difficulty.

We would like to thank Brett VK1AMG, Alex VK5ALX and Cris VK2BOZ for making the effort to work SO-50 and making contact with Mal. Rob VK2GOM was also working portable in the club grounds for the pass.

The demonstration produced a lot of interest generally from operators who had not considered working satellites before the demonstration, to those who used to work the birds in 'the old days' and were inspired to come back to them.

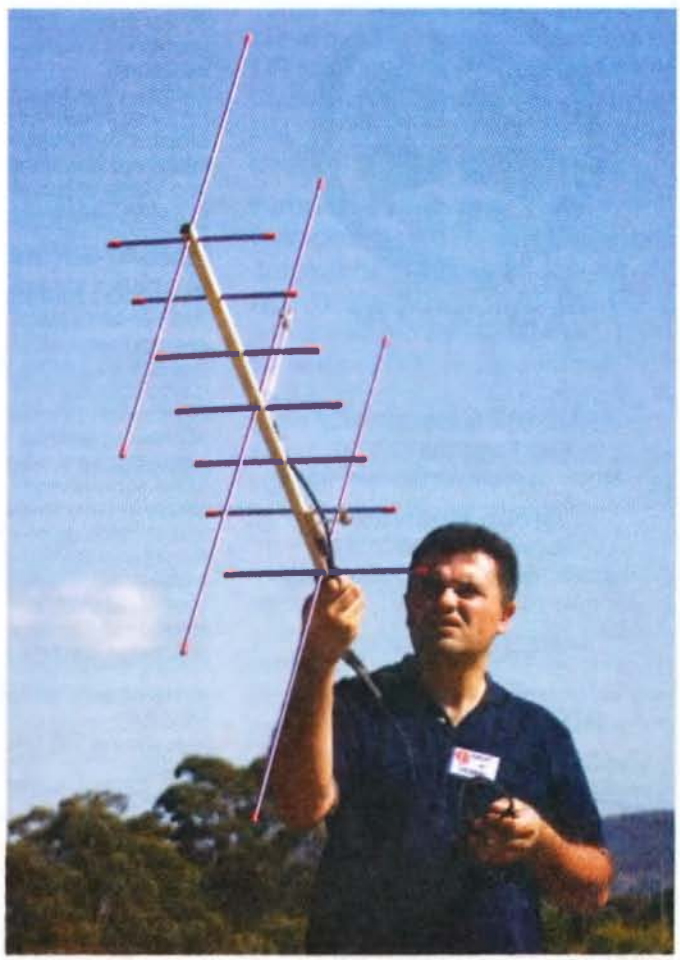
We would also like to thank Tim VK2XTT President of BMARC for the opportunity to take part in their Winterfest and Mal VK2MAL and Judy VK2TJU for manning the table.

If any other clubs would like AMSAT-VK to attend an event and hopefully demonstrate working satellites, please contact the coordinator whose email address appears in the AMSAT-VK info-box and we will try to arrange for representatives to attend.

My thanks go to Judy VK2TJU and Mal VK2MAL for this item.



Judy VK2TJU at the table at BMARC Winterfest.



Mal VK2MAL portable at BMARC Winterfest August 2009

Antarctic DX

Bill Erhardt from Montana, USA, will be doing a tour of duty at McMurdo Base in the Antarctic from November to February. He will be taking an Arrow II antenna and Kenwood TH-7(G) to make contacts on SO-50 and AO-51.

Another amateur will take all-mode radios for AO-7, FO-29 (if operational) and VO-52. Sunday will be the best time as it is his normal day off. He hopes to work plenty of VK and ZL amateurs. The base callsign is KC4USV.

McMurdo Base is located at 77.3 S and 165.0 E, which is almost due south of New Zealand and is in New Zealand's time zone.

Distances from capital cities are Adelaide 4913 km, Brisbane 5601 km, Darwin 7485 km, Hobart 3940 km, Melbourne 4509 km, Perth 5632 km, and Sydney 4992 km.

Given that SO-50 has an average footprint diameter of 5500 km and AO-51 has 6000 km, the times when McMurdo base, VK and ZL stations are in the footprint will be rather short. Quick QSOs of name, grid square, and a short message will probably be needed if there is a queue waiting to talk to Bill. The mutual window will only be a few minutes at best.

For the analogue birds VO-52 has a footprint of 5400 km, FO-29 varies from 6000 to 7600 km, and AO-7 has the best range of 7900 km. With AO-7 it may be possible to have a QSO from most of VK/ZL.

Thanks again to Judy VK2TJU for making this upcoming event known.

If it sounds too good to be true...

An item that has done the rounds of the AMSAT-BB mailing list and the WIA broadcast concerned the proposed flight of TubeSat Personal Satellites.

TubeSat is a system devised by Interorbital Systems, a company that manufactures rockets and spacecraft. TubeSat consists of a rocket that will launch 32 TubeSat Personal Satellites into low Earth orbit at an altitude of 310 km. At this height the satellites' orbit will probably decay in less than a year.

The TubeSat satellites are small cans with a mass of only 0.75 kg. Double, triple and quadruple sized TubeSats are available. For a fee of only US$8000 they will supply in kit form the case, solar panels, batteries, transceiver, processor and programming software. The user will have 200 grams left for their project. This is a real bargain when you consider the price also includes the launch.

The idea has some merit. Cubesats have demonstrated that worthwhile projects and experimental platforms can be constructed in packages with a mass of 1 kg and volume of 1 litre. The TubeSat would be ideal for testing new materials, sensors and circuits (e.g. microwave beacons) for limited periods in the harsh conditions of space.

Then it probably is

On to the harsh reality. TubeSat's proposed 2010 launch is from Interorbital System's launch site on the South Pacific island of Tonga. According to their



AMSAT-VK

AMSAT Co-ordinator
Paul Paradigm **VK2TXT**
email: **coordinator@amsat-vk.org**

Group Moderator
Judy Williams VK2TJU,
email: **secretary@amsat-vk.org**

Website:
www.amsat-vk.org

Group site:
group.amsat-vk.org

About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP Maddens Plains repeater on 146.850 MHz
VK2RIS Saddleback repeater on 146.975 MHz
VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm.

These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

website this has not been built yet. TubeSat will be launched using their Neptune -30 launch vehicle. On the website there are details of tests of the rocket engines but no details of any launch of the rockets. Nor any pictures of a completed Neptune-30.

If all the TubeSats are bought then the total income is in the order of US$250,000. They claim this will cover the launch vehicle and associated costs. Consider the current cost to launch a Cubesat is around US$40,000 per kilogram. This may not include the cost of the Cubesat itself.

The size and weight of a Cubesat (or six) is not significant compared to the main payloads which may weigh tonnes. As a comparison, last year SpaceX launched their fourth rocket, Falcon1, with a 165 kg payload into a 500 x 700 km orbit. The launch cost was only US$7.9 million. This was after over US$100 million was spent in development and three launch failures.

It is still cheap compared to other commercial launches but somewhat more than Interorbital Systems proposal.

Another future launch system was recently announced by JAXA, The Japan Aerospace Exploration Agency.

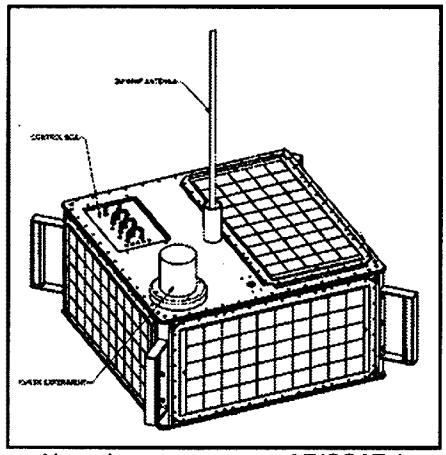
They will spend US$213 million to develop a small launch vehicle next year. It will use solid fuel rockets and be able to carry 1.2 tonnes into orbit at a cost of US$32 million per launch (including the cost of the launch vehicle). While it will only carry half the load of JAXA's H-2A launch vehicle, it will cost only a third and be usable in much less time than a liquid fuelled rocket. JAXA plan to have its first launch in 2012.

But history has shown that transportation has become more affordable over time. Rocket launches will always be expensive but to get your own personal satellite in space may be possible in the future.

Details of Interorbital Systems proposals, sales brochures and the TubeSat project can be found at http://interorbital.com/index.html

Updates

Suitsat-2 has a new name- ARISSat-1. The hardware originally planned for the Orlan spacesuit is now being incorporated into a new structure to be sent to the International Space Station in January 2010.



New shape, new name ARISSAT-1

As reported in last month's column, DragonSat was successfully launched from the Space Shuttle Endeavour. Unfortunately it has not separated into two satellites as planned. AggieSat-1 has been heard but BEVO-1 has remained silent. Castor and Pollux are continuing to be heard and telemetry downloaded.

FO-29 has had a hiccup and has gone silent. At the time of writing (late August) the command stations have switched on the CW telemetry beacon while it is over Japan. The last time this happened was in April 2007. FO-29 is currently nearing the end of a long period of eclipses and this is putting some stress on the 13 year old batteries. The next maximum eclipse period is mid 2012.

AO-51 five years on

AO-51 celebrated its fifth birthday at the end of June. It still performs very well and is arguably the most popular satellite in use today.

A couple of messages from the command team have recently highlighted the changes that have happened since it was launched. The most important is that the power budget has decreased. The batteries are charged and discharged about 15 times a day whenever it is going through an eclipse period. The solar cells degrade over time.

It has now got to the stage where AO-51 can no longer support higher power usage operations such as the S-band transponder during eclipse periods. Regular users would have noticed the power levels during the May/June 2009 eclipse period were at their lowest ever to prevent excessive battery discharge.

The spin rate has also dropped down to 6 minutes per revolution. Nulls on the L/S band antenna are more noticeable. Overall AO-51 is still in very good shape and the command team are doing an excellent job in keeping it going.

Final Pass

FO-29's silence has shown once again that even the best satellites do eventually fail. At this stage it looks like FO-29 will not be a silent key just yet. It will be in maximum sunlight during 2010, with eclipses in 2011 and long eclipses in 2012. Time will tell if we can get a few more years of good service out of FO-29. **ar**

OTY From VK3SN:

Portable with power pack

Congratulations to VK2HRX on his article documenting portable operation from Mt Kosciusko which appeared in the September AR. I was delighted by his description of operating conditions, the rig set up and his various antennas. The photos were also excellent.

I would agree with the comments towards the conclusion of the article where he suggests that running the rig at full power on HF may have been unnecessary. From that location, even with a compromise antenna, I suspect that QRP power levels or slightly higher would have readily sufficed and given excellent 40 m contacts across most of VK. The payoff (as noted in the article) would be greatly extended battery life.

SLA batteries are a cost effective and rugged means of running portable operations, but carrying the heavier high capacity units in a backpack up a mountain is no mean feat. One promising solution may be the emergence of ultra-compact fuel cell technology using methanol. These will not run the rig at the full 100 W, but would probably provide enough output to give 10-20 W. With the development of ever more compact gear and refinements to alternative energy technologies, it is certainly a good time to play portable radio from interesting locations.

Great work VK2HRX – we all look forward to hearing more!

Cheers, VK3SN
Dr. Stephen Warrillow
FRACP FJFICM **ar**

The Geelong Amateur Radio Club

Tony Collis VK3JGC

Presentation of the Peltier Effect

Greg VK3VOX gave a presentation to the club on the Peltier effect and some of its recent applications both in computers in the cooling of processor chips and power generation from heat generated in motor vehicle exhausts.

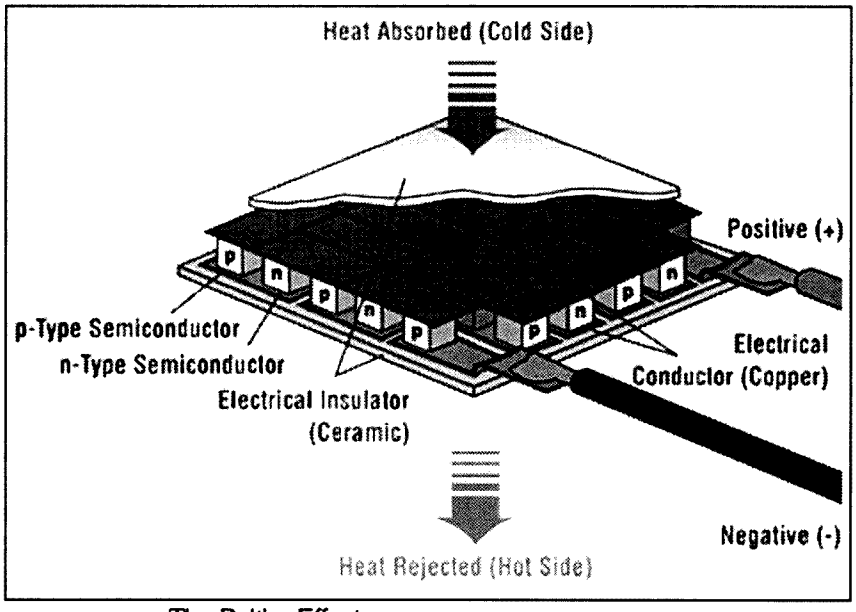
Greg explained the process wherein the cooling of one junction and the heating of the other occurs when an electric current is maintained in a circuit of material consisting of two dissimilar conductors; this effect is even stronger in circuits containing dissimilar semiconductors.



Greg VK3VOX

In a circuit consisting of a battery joined by two pieces of copper wire to a length of bismuth wire, a temperature rise occurs at the junction where the current passes from copper to bismuth, and a temperature drop occurs at the junction where the current passes from bismuth to copper. This effect was discovered in 1834 by the French physicist Jean-Charles-Athanase Peltier.

The diagram below shows a thermoelectric cooler which is a special type of semiconductor that functions as a heat pump. By applying a low-voltage, high-current, DC power source, heat will be moved in the direction of the current (+ to –). The heat is pumped from one side of the module to the other, so that one face will be cold while the opposite face will be heated, and the effect is reversible.



The Peltier Effect Peltier image courtesy Melcor NJ.

Presentation on Analogue and Digital Networks

In the digital corner...

Ken VK3NW explained to the GARC members the principles of working with Trunk Radio Digital Networks within Victoria; illustrating how the process works such that the operation of transferring from one Trunk, or branch, to another is seamless to the radio user. However there are situations where receiving multiple trunk sites, when the user is equidistant, and the subsequent multiple re-transmissions can render communication unintelligible.



Also, like digital TV, the system will suddenly cut out without any warning if the received signal levels are too low and your radio cannot find a new Trunk control site.

...In the analog corner

Bert VK3TU on the other hand extolled the virtues of the Analogue network. Although it may eventually be superseded by the Digital network, like analogue television, a poor signal still affords communication without the uncompromising rapid drop out of digital communications.

It does however suffer the same problems as digital when equidistant from two trunk sites. In order to seamlessly switch from one site to another the system requires accurate control of frequency, phase and transmission line delays that may be occasioned by twisted pairs to microwave links. Part of this process is to use GPS synchronising pulses.

ar



Building your own website

Rob Norman VK5SW

One of the great things about ham radio, nowadays, with the advancement of technology, is the ability, once you have worked someone on the radio, to look them up on the Internet to find out more information about them.

www.QRZ.com is the site most used for this and has information on most hams from around the world but it is up to the individual amateur to put their own information onto such a website.

I like to look up a callsign and see a picture of the person I have just worked and hopefully something about their station. This adds greatly to the enjoyment of our hobby.

The next step on from this is to see a website that the operator has made about him/herself, the radios, antennas, family, what it is like where they live, and so on. It is a free world, so you are able to put just about anything you like on your website, within reason. The more interesting the site, the more often people are likely to look at it.

I certainly do not know much about building websites. All I know is what I have taught myself by using a program which enables you to build your own site, a HTML editor.

It is a program by Microsoft called FrontPage, which I have had for about five years, so I am sure there are much better and more capable programs available nowadays. The website I have made is very simple by today's standards. It basically consists of a number of pages with text and photos on them showing my ham radio station and where it is located.

The point I am trying to make is that you do not need to be a rocket scientist to make your own website. I only have experience with this particular program but have been able to muddle my way through, in order to create a website and upload it onto the Internet.

However, for me, it did take some time to achieve but once you are able to upload your site, I have found that you will want to improve it. It becomes an evolving project where you think of new ideas of how to improve your site and then set about trying to do just that.

So, how do you go about building a website? Well, the easiest thing to do is to have a single page, or 'Homepage'. To do that, using FrontPage, it is a matter of clicking on 'New Page' and a 'clean white page' appears on the screen. Along the top is a row of commands like: 'File, Edit, View, Insert, Format, Tools', and so on.

If you want a coloured page, other than white, you go to 'Format' and then to 'Background' and change the colour of the page. You can also use a picture, taken from the hard drive of your computer, as the background to your page. To adjust the colour and/or the type of print, click on Format again and change the 'Font' settings to your liking.

If you want the text to be centred, rather than starting from the left hand side of the page, you can simply do that with the click of the mouse. As with any new program, it takes a while to become used to the various features.

So, for example, you may want to start with a white page and a heading up the top and then some text, maybe your callsign, station details, whatever, and then you may wish to place a picture next to it.

To do this, make sure you click your cursor in the correct position for the image to appear and then click on 'Insert' and browse your hard drive for the appropriate picture. However, the file size of the image is important if it is going to be put on the Internet.

The smaller the file size, the quicker it will be downloaded to computers displaying your site. Most of the photos taken by digital cameras are too large to be put directly onto your page, so they need to be 'compressed' to reduce their file size.

Use the search engine Google, or similar, to find suitable free software with which to do this. I try to keep my images below 40 kilobytes (kB) in size. You can also change the dimensions of the pictures to suit your page, also by using free downloaded software.

Sooner or later, you are going to have to deal with the 'Code' (HTML) in order to improve your site. You will need to learn how to 'cut, copy and paste' but do not be put off by this, take one thing at a time and you will eventually get there.

Once you are happy with the design of your page and have saved it, you will need to upload it to an FTP Server. Some service providers with whom you have your Internet connection, provide free hosting using a homepage address which might be something like http://users.billjones.twilight where 'twilight' is the service provider. At a later date, you may wish to purchase a 'Domain name'.

Uploading to a server is quite easy, once you get the hang of it, of course.

I use www.smartFTP.com By typing in your user name and password and then by dragging and dropping your home page document and images onto the 'Upload page', it will finally be uploaded onto the Internet. Prior to doing this, your homepage document will have to be named 'index' or something similar.

For more exposure, you can list your homepage with websites that list only ham radio sites.

To succeed, you need to fail first to learn from your mistakes, so with perseverance, you will soon teach yourself the right way to go about things.

I have tried to make this article as simple as I can because firstly, I am not an expert and also, I believe the best way to build your own site, from my experience, is to obtain the appropriate software and have a go. Please visit

www.vk5sw.com

ar

EDITOR'S NOTE.

I took Rob up on his invitation to visit—amazing—this 'homebrew' site is one of the best, commercial or otherwise, I have ever seen. It is well cooordinated, the navigation is immaculate, the content and sound excellent and it looks good.

At my visit Rob had had 10445 visits from 95 countries.

And lastly, Rob's site and his solar powered shack operate from a 'tin shed' about 150 kilometres north of Adelaide. From his doorway, on a clear day, you can just see the Black Stump.

Hamads *classifieds* — *Free to Members*

FOR SALE NSW

TH3 JUNIOR ANTENNA 3 element beam with assembly instructions. In reasonable condition and partly disassembled for transporting. Will accept any reasonable offer.
Arthur VK2DKF QTHR. phone 02 47398695, or email arthur.forster@bigpond.com

HILLS TELOMAST,Fully Galvanised, section, 12 metres fully extended, Heavy Duty Mast, with guy ring. Self Locking sections, Cheap at $160 located on southern Gold Coast, pick up preferred Best 73 Andy VK4FBI PO BOX 579, Banora Point, NSW. 2486 vk4fbi@yahoo.com.au

HY-GAIN TH3 MK3 TRIBAND 10-15-20 METRE trapped HF yagi antenna. New Trap Caps, All New Marine Grade Stainless Steel Bolts Including Hose Clamps Alminoxed Elements, Corium 209 protected aluminium, High Power Hy-Gain BN-86 matching Balun, Hy-Gain USA Owners Manual Assembled & ready to go! In 20 minutes you will be ON THE AIR with a near perfect SWR! You can transport with standard roof racks. Located Southern Gold Coast, $495 Contact Andy VK4FBI vk4fbi@yahoo.com.au PO BOX 579, Banora Point, NSW. 2486

DRAKE MN2000 2 kW ATU, with manual, electrically perfect, some marks on front panel as previous owner attached labels around turning knobs.Price $400 plus postage QUALITY SOLDER, manufactured by Kaster, 63/37 alloy, 0.5 kg. ,0.8 mm diameter. Price $ 40 plus postage Both can be delivered to Sydney,Canberra area early October. Tom VK2OE, wojiech.tomczyk@det.nsw.edu.au or write: 3 Buller St, Bonalbo NSW 2469

KENWOOD TS-950SDX TRANSCEIVER KENWOOD's top of the line Digital HF Transceiver TS-950SDX S/N 41100165 Purchased in Australia from Kenwood Agent. This rig is a pleasure to operate by the serious amateur HF operator. Read review: http://www.eham.net/reviews/detail/583 Condition as new, manuals, circuit diagram, all power leads, Dynamic hand mike with up and down buttons, external SP 950 speaker. Original packaging, Freight and insurance buyer pays. Pick up available $3500.- Niels QTHR VK2BKQ Phone 0425 30 60 60 or email: 73g1000@gmail.com

WANTED NSW.

For AR8 Aircraft receiver rebirth. Requires any dial or scale components. Also UX4 four pin plugs and sockets. Contact Les VK2ZPA email lespayne@optusnet.com.au Mobile 0417487930 QTHR.

FOR SALE VIC

TOSHIBA 2520CD Satellite laptop computer. Installed programs Word, Publisher, Dreamweaver4, Notebook, myobaccount, MSproject, Windows media. Fast internet ethernet card. Excellent performer, immaculate condition,power pack and batteries $100. NO ROOM FOR AN 80 m DIPOLE? I can sell you a HUSTLER RESONATOR RM805 High Q low swr mobile or fixed station model $80. 10 m HELICAL 5/6 MOBILE WHIP ANTENNA $20. 2 m MOBILE 5/6 ANTENNA SO 239 connect $20 Stan VK3BNJ 03 9743 6702

FOR SALE QLD

CODAN 8525A - Fixed head. 99 frequencies including 80 m, 40 m, 20 m, all VKS737, RADTEL and HF Radio Club frequencies. Includes mounting bracket and microphone. Serial Number A3211. $700. Contact Roger VK4CD (07) 47 740221. QTHR or vk4cd@bigpond.com.

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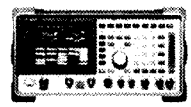
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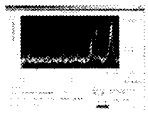
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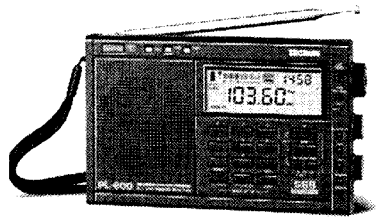
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VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 439.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
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VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.180, 145.400 IRLP 6800 Katherine and 146.900 Darwin. Sunday 2000 local 145.400 IRLP 6800 Katherine.

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Our cover this month

Icom's IC-7600 HF – 6 m all mode transceiver. Outstanding!
Read the review by VK3BR and VK3OM on page 22. Photo VK3BR

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So, if anyone wishes to republish an article from *AR*, contact me as Editor in the first instance. I can then usually pass the request on to the author.

For material that is published on the WIA website, any request can be made to the Secretary of the WIA. However, do note that much of the material will not be permitted to be republished, as it is best for everyone if we have the material in only one location. That way, it can be as up to date as possible.

Some might say "But many do not have access to the internet". I would disagree – in most areas, you only need to go to the local library and ask for assistance! If you take the URL for the material with you, a librarian will usually help you to quickly locate the material.

A little time spent in the shack

I was able to commit some time recently to listening to the radios and attempting some contacts on VHF, apart from contacts via the local repeater network.

I did manage to confuse one amateur in Canberra during our first contact since I acquired my new callsign! It was an aircraft enhancement contact on a Saturday morning, so signals were a little variable at the start of the contact.

The next task was to get the gear working again with the interface to the computer, to enable use of the WSJT modes. Watching the VK Logger, I noted that Barry VK3BJM/5 was finally on air at Mount Arden. Moving the beam towards him bought S6 noise across the entire lower segment of 144 MHz! I could see others having success in working Barry, but nothing heard by me due to the noise. I eventually gave up and moved to some other tasks.

I was up early on Sunday morning, hoping for a meteor scatter contact. Others were having success, but that broadband noise source was strongest at my optimum beam heading. Darn! I went back to just monitoring the frequency being used.

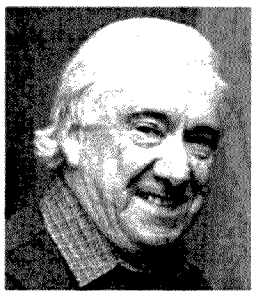
And then there was a glimmer of hope – I had a perfect decode of Barry's signal as he was completing a contact into Melbourne using JT65a. Having made contact with Barry via the logger, we spent some twenty minutes attempting a contact. Neither of us had any decodes, even with the mode's averaging function. I was hearing regular meteor pings, so I suggested to Barry that we change to FSK441. Almost immediately I received both our callsigns from Barry and started to send a report. It was now late in the morning, and the number of meteors was falling. But we did finally complete the contact, after almost an hour!

Thanks for the new grid square, Barry!

Cheers, Peter VK3PF **ar**

WIA comment

The IARU Region 3 Conference



Michael Owen VK3KI

I am writing this Comment in Christchurch, New Zealand.

I have been attending the International Amateur Radio Union (IARU) Region 3, 14th Triennial Conference on 12-16 October, hosted by the NZART. "Triennial" because the two other IARU Regional organisations meet in a three year cycle.

I was present as one of the IARU Region 3 Directors, and while I write this Comment from a WIA perspective, it was not my role to represent the WIA.

But the WIA does participate in IARU Region 3. We thought the Conference was sufficiently important that there were four WIA representatives: Secretary Geoff Atkinson, Jim Linton, Peter Young and David Wardlaw.

The only way the WIA can influence the policies of the IARU is to participate.

The way the Conference works is through working groups, two running at the same time, and with other working groups addressing special issues such as finance and perhaps special matters. Yes, that disadvantages small societies who are only represented by one person.

Then the conclusions of the working groups are accepted, rejected or changed on the last day by the whole Conference.

For the WIA, the cost of travel was very low, requiring travel only to New Zealand. Therefore the WIA was able to participate and at the same time introduce some new individuals to amateur radio's international forum.

Apart from the WIA there were nine other national member societies actually attending: ARRL from the USA, ARSI from India, CRSA from China, HARTS from Hong Kong, JARL from Japan, KARL from Korea, ORARI from Indonesia, SARTS from Singapore and NZART.

Three further societies were represented by proxy: RSGB from the United Kingdom, RAST from Thailand and VARS from Vietnam.

The peak international policy body, the IARU Administrative Council – comprising the IARU President, Vice President and Secretary, and two representatives from each of the three IARU Regional organisations – ordinarily meets annually, either just before or just after a Regional Conference.

So, a Regional Conference becomes the meeting point for those ultimately responsible for advancing the amateur interests at the ITU's World Radiocommunications Conferences (WRC), and the regional telecommunications organisations meetings in preparation for the WRC.

What did the Conference talk about?

Obviously the last WRC, what lessons could be learned from that, and the next WRC in 2012, and many other matters.

Two topics, the IARU Monitoring System, (we call it Intruder Watch but Monitoring Service (MS) is probably more appropriate), and emergency communications had been identified as the focus of the Conference, and major decisions were made on both of them.

Why is Intruder Watch important? Because without complaints about an intruder causing harmful interference, it may be claimed that there is no breach of the ITU Radio Regulations, which allow a station to be placed anywhere so long as it does not cause harmful interference to a station operating in accordance with the ITU's Radio Regulations.

A special working group was established with Peter Young VK3MV chairman and Rod Stafford W6ROD as secretary.

It was agreed that there was a need to update and modernise the IARU protocols and procedures to effectively deal with intruders causing harmful interference in the amateur radio bands.

The proposed measures adopted by the Conference included greater coordination between the IARU MS coordinators in the three IARU regions, a single website to more effectively collect data on intruders and to record action being taken on them, and to provide information to assist those submitting intruder observation reports.

The other major matter was the role of amateur radio in emergency communications. The Indonesian society (ORARI) and its amateurs and the Chinese society (CSRA) and its amateurs were highly commended on the role that they played in Indonesia and China after major natural disasters.

The Conference considered the concept of emergency centre of activity (CoA) frequencies worthwhile, and adopted 3.600, 7.110, 14.300, 18.160 and 21.360 MHz.

These have been immediately included in the IARU R3 Band Plans.

CoA are not spot frequencies but starting points plus or minus five kHz, are not the only frequencies to be used, and are not mode specific and should be considered as being 'all modes'.

Among the other matters considered were ARDF, better utilisation of all allocated amateur bands, BPL/PLT, EMC, visitor licensing including the Australian class licence, liaison between societies and their radio administrations, operating standards, various projects, together with support, for the development of amateur radio in the region.

Also considered were the New Zealand KiwiSAT satellite project, the beacon project, various matters affecting the 7 MHz band, including the footnotes to that band, future financial implications and the budget for the next triennium.

The NZART was praised for its hospitality and efficiency as the host society. The next IARU Region 3 Conference will be in Ho-Chi-Minh City, Vietnam in late 2012.

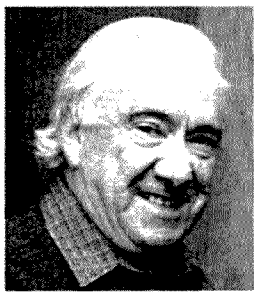
Unfortunately international conferences can turn into just talk-fests. But this was much more than that. I believe that the Conference was constructive, and the WIA's participation was justified.

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WIA News

14th IARU Region 3 Conference in Christchurch New Zealand concludes

An election was required for the five-member IARU R3 Directors, with Michael Owen VK3KI, Shizuo Endo JE1MUI, Peter Lake ZL2AZ, Gopal Madhavan VU2GMN and Joong-Guen Rhee HL1AQQ being re-elected.



IARU R3 Chairman Michael Owen VK3KI

The Directors then nominated Michael VK3KI as their chairman, which was endorsed by Conference. The Secretary, Jay Oka JA1TRC, was elected unopposed.

Michael VK3KI described the Conference as one of the most constructive and friendly he had attended. He said the credit for that goes to all who participated in the meaningful discussions resulting in productive outcomes.

All in attendance were in praise of the NZART organising committee, headed by Terry Carrell ZL3QL, who also took on the role of Conference Chairman, contributing greatly to its success. Sue Carrell and Mary Rogers ran a full program during the week for the partners of delegates and visitors.

The Conference concluded on Friday, 16 October 2009.

Electromagnetic emission calculations made easier

An online tool that has just been released can be very useful for radio amateurs needing to comply with their licence conditions in relation to electromagnetic radiation (EMR), which is now called EME which stands for electromagnetic energy.

Developed by Swinburne University together with EM Software and Systems, the online tool is ideal to calculate exclusion zones around antennas where radiation levels exceed safety standard limits. This requirement applies not only to amateur stations but other radio transmitters and mobile phones that operate between 3 kHz and 300 GHz. Safe levels of human exposure to radiation are determined by the Australian Radiation Protection and Nuclear Safety Agency (ARPNSA). The EME limit requirements for amateur stations were introduced basically on a self-assessment regime and the average home station should have no difficulty in complying with them.

The online tool, commissioned by the Australian Communications and Media Authority, has application for not only home stations, but through its exclusion zone calculator will allow people to conduct safety assessments of transmitting antennas, such as those found on boats, four wheel drive vehicles and in radio communication networks. To calculate the zone, all users need to do is enter the antenna type, transmitter power, antenna gain and frequency band into the online tool, and it will automatically calculate the safe distance around the antenna.

The online tool can be accessed at the Australian Communications and Media Authority website.

2009 JOTA/JOTI address to Scouts and Guides

Her Excellency Ms Quentin Bryce AC, Governor-General of Australia, Chief Scout and Patron of Girl Guides Australia addressed Scouts and Guides in a message broadcast at 1300 hours local time Saturday during the annual Jamboree On The Air and Jamboree On The Internet (JOTA-JOTI).

JOTA-JOTI was on the weekend of 16-18th October, and involved some 10,000 Scouts and Guides in Australia, and about 500,000 worldwide. JOTA-JOTI gives young people an opportunity to meet and learn about Scouts and Guides in other parts of the world.

JOTA-JOTI has a long tradition in Scouting and Guiding. This year was the 52nd JOTA and 13th JOTI.

Amateur Radio assists in disasters

A severe tropical storm in The Philippines and earthquakes in Indonesia have seen radio amateurs providing emergency communications and other relief and recovery assistance.

Philippines Amateur Radio Association (PARA) President, Dr Joey Panganiban DU1BP, reports that a tropical storm named "Ondoy" hit the Philippines creating a tragic calamity with amateurs swinging into action to help.

Joey DU1BP said, "*We have mobilized our amateur radio clubs for the relief operations. The frequency 7.045 MHz has been used for general announcements while 2-metres FM is used for our community operations.*"

The disaster has affected more than two million people and the death toll is officially at least 1,100.

Joey DU1BP said, "*All amateur and civic radio clubs are now on operation in Metro Manila under the guidance of the National Telecommunications Commission and PARA.*"

He said the PARA Secretariat has been designated to receive donations and is soliciting donations both in kind and cash for the victims.

Joe DU1BP further said, "*What the evacuees need is foods that are ready to eat (those without much preparation) such as canned goods, noodles, rice, bread, coffee, milk, sugar, salt and water.*" "*They also need medical attention and medications needed for coughs, colds, fever, diarrhoea and vitamins. These items will be repacked and given direct to the recipients, using community officials as contact points.*"

Meanwhile, a powerful earthquake rocked western Indonesia on Wednesday 30 September, trapping thousands under collapsed buildings and triggering landslides.

At least 75 people were killed on Sumatra Island after the Richter scale magnitude 7.6 earthquake. In a brief message just hours after that disaster from the Organisasi Amatir Radio Indonesia (ORARI), received by IARU Region 3 Disaster Communications Committee Chairman, Jim Linton VK3PC, it has been confirmed that amateurs are involved there too.

Wisnu Widjaja W1SNU/YB0AZ reports "*We are active on the field now to support the emergency communications in West and South Sumatra, Indonesia. Now, we are using 2-metres and the 40-metre band.*"

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Dip oscillator helper

Lou Destefano VK3AQZ

This dip oscillator helper can be used to assist with the measurement of RF coil inductance using a dip oscillator. A calibrated tuning capacitor is used to resonate with the coil under test using a simple jig. This jig supports, and allows, easy positioning of the dip oscillator, in relation to the coil under test. The dip oscillator frequency, in conjunction with the value of the calibrated capacitor, is then used to find the unknown inductance.

Dip Oscillator Helper

A useful instrument for the home brewer is the grid dip meter, or dip oscillator.

The dipper is used for finding the resonant frequency of tuned circuits, which are usually mounted on a PCB, or in a piece of equipment. It is also useful for finding the inductance of small RF coils when you do not have a suitable inductance meter, or bridge. Theory of operation of the dip meter can be found in the amateur literature.

I am currently building a project which involves the construction of various coils using toroid cores.

An annoying practice I have developed over the years is to quickly wind a coil and then solder a mica capacitor in parallel with the bare ends of the coil. I then attempt to measure the resonant frequency using the dip oscillator.

Those who are familiar with this method of using dip meters will know how difficult it is to actually dip a toroid type of tuned circuit. You dangle the tuned circuit in mid air and attempt to hold it somewhere in the vicinity of the dipper's coil, all the while trying with the other hand to turn the dip meter dial looking for some sort of flick.

It is at this point in time that the dial decides to stick, or the sensitivity is way off, or the dodgy solder joints you performed quickly, so as not to burn your fingers, break away. Then you find you have the wrong coil plugged in to add to your misery!

If you are testing a coil with a tuning slug, it is easier if you set the dip oscillator at a frequency somewhere in the vicinity of where you think it will be, and then tune the slug looking for the dip rather than turning the dip oscillator dial. This tends to overcome the problem of false dips that sometimes occur.

However toroids do not have a slug so this method cannot be used unless you put a variable C across it, and tune that instead. Now you need to find what the value of the C is, in order to calculate the coil inductance.

My project involved building a number of toroids, so rather than go through all of the above time and again, I decided to try and make something to make life easier.

I constructed a very simple device which has turned out to be very good.

It consists of a variable capacitor with a calibrated dial mounted on a frame which allows you to place the dip oscillator close to the coil under test. The coil is connected to the capacitor via a pair of screw terminals or crocodile clips. The dip oscillator sits on a small piece of timber at the correct height to couple with the coil under test. It can be slid closer or further away.

The circuit of this simple apparatus is shown in Figure 1.

Usage is very simple. Connect the test coil to the terminals. Spread the leads out so as to form a sort of loop. Place the dip oscillator on the timber block so as to have the dip oscillator pickup coil within, or very near, the loop formed. Turn the dip oscillator on and select a frequency you want to test the coil at. I often use 10 MHz for simplicity. Then you adjust the sensitivity pot on the dip oscillator for the correct position of the dip oscillator meter needle.

You now adjust the dial on your calibrated variable capacitor for a dip. Move the dip oscillator closer to the coil under test for a nice deep dip. Then move it further away till you get a just perceptible dip. The looser the coupling between the dip oscillator coil and the coil under test, the more accurate the measurement. If you cannot find a dip, try another dip oscillator frequency. Once you have a dip, use the scale on the calibrated capacitor, in conjunction with the dip oscillator frequency, to calculate the inductance. The formula can be found in text books, or you can use the calculators on the web.

Using this setup also makes it easy to check how broad the tuned circuit is. As you adjust the capacitor you get a feel as to how sharp it is, and hence its approximate Q.

A frequency counter can be coupled to the coil by passing a piece of wire through the toroid and connecting the frequency counter probe to it.

One advantage of this method is that the counter does not display a reading until the coil under test resonates with the capacitor at the frequency of the dip oscillator. A good coil will give quite a decent reading at resonance. Lower frequencies may require an extra turn

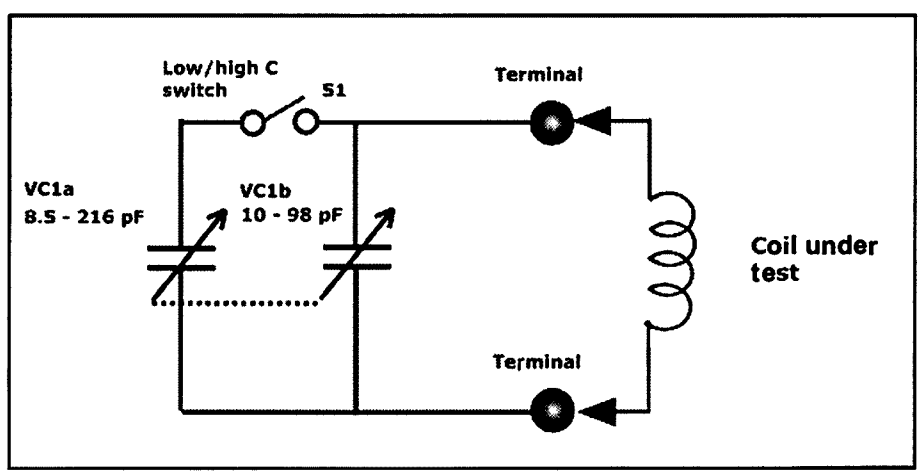


Figure 1: Circuit of the basic dip oscillator helper.

through the toroid for a stable reading. A high impedance RF diode probe across the coil reads 0.5 V dc for a 3.6 uH, T50-6 toroid, at 10 MHz. Please note that the frequency counter must have a good sensitive front end.

It is important that the capacitor has a good accurate dial. It does not matter if the calibrations are in picofarads, 0 – 100, or just plain degrees of rotation. The important thing is the accuracy of the readout and its repeatability.

Construction of the unit was kept simple and basic.

The capacitor I used is an ex AM radio air dielectric tuning capacitor with two sections. I also included a switch to connect the two sections of the tuning capacitor in parallel and increase the range

The capacitor is mounted on a piece of double sided PCB material behind a front panel made of the same material. The rest of the unit is constructed using scrap pieces of double sided PCB material and screwed to a wooden base. All of the PCB pieces are soldered together to form a sort of three sided box.

Photo 1 shows the front of the unit while Photo 2 shows the rear.

The dial is an old Jabel vernier drive unit with a 0 – 100 scale, which I had in my junk box. However I am sure most people will be able to come up with some sort of system to suit. A knob with a protractor would also work quite well.

I used a capacitance multimeter to measure the capacitance of the variable capacitor at each of the '10's' positions, and entered them into the vertical column of an Excel spreadsheet. I used Excel's graphing function to draw up a nice looking graph showing capacitance versus dial reading for both positions of the high/low capacitance switch. This graph can be seen in Photo 1 behind the unit. The coil inductance is then calculated using the formula for resonant frequency, as read on the dip oscillator dial, or an attached frequency counter. To find the inductance value, I have a spreadsheet with the formula in one of the cells. I also often use the many calculators on the web.

After I completed the unit, I felt I could share this idea through AR magazine.

However, small tuning capacitors are now a bit hard to purchase, so I decided to build a similar unit using a varicap diode. There is, however, considerably more work involved if you have to use a varicap diode.

A stable source of voltage and a calibrated potentiometer is needed.

Also, the current project I am working on requires varicap diodes so I took the opportunity to also help me test and choose various diodes for this project. This jig lends itself nicely for this purpose.

The circuit used is shown in Figure 2.

A three terminal regulator is used to provide a stable 10 Volts DC to a 10 kilohm log pot.

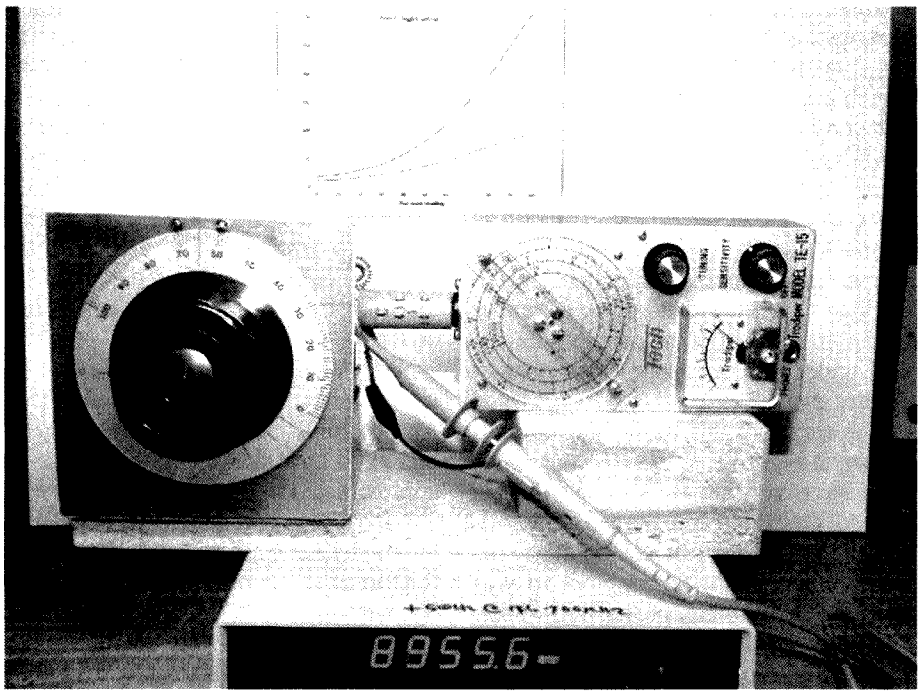


Photo 1: Front view of the dip oscillator helper.

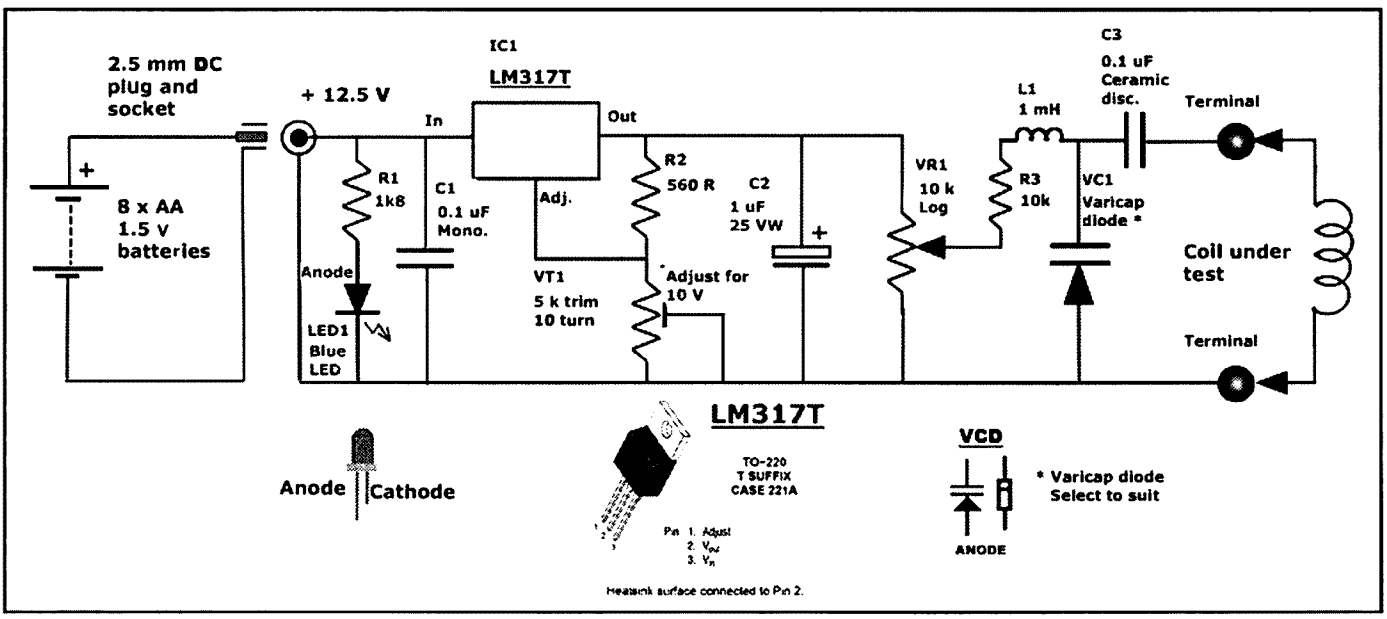


Figure 2: Circuit of varicap version of dip oscillator helper.

The pot is wired in such a way as to counter the non linear curve of the diode and produce a more linear reading of capacitance versus pot rotation. To check the law of the pot, simply rotate the shaft to the midpoint, and measure the resistance from the wiper terminal to either end.

A linear pot will show half the total value, whilst a log pot will read something like 20% to one end, and the remaining 80% to the other end. The exact amount depends on the exact law of the pot, and it can be as much as 10% and 90%.

In my unit, the pot is wired such that the resistance between the moving arm and the ground connection measured 727 ohms with the pot set at halfway. The resistance to the supply end of the pot measured 8003 ohms.

These figures will vary depending on what type of pot you have. The pot can be as low as 1 kilohm log (10 mA of current) to anything up to 100 kilohm (0.1 mA of current). The reverse biased diode should not draw any current so it does not matter on the exact value. However, too high a pot current will drain the battery quicker.

With the pot connected as above, as the pot turns from the earthy end to half way, the diode reverse bias voltage will rise from 0 to around 0.8 volt. A diode's reverse biased capacitance changes more rapidly as it approaches zero (square law), so by wiring the pot in this way, the capacitance change with voltage is spread out more evenly over the full travel of the pot.

The 360 degree protractor I used has degrees marked in both directions. I used the 0 degree mark for 10 volts (low C), and the 300 degree mark happens to be the other end of the pot travel and gives 0 volts (high C). Direction of rotation is anticlockwise from 0 to 300 degrees.

For simplicity, the components were mounted on a small length of double tag strip, and the coil test terminals were mounted at the same height as for the simple capacitor version so that I could swap the two models over.

A white printable CD was attached to the pot shaft using a tuning gang dial cord drum. A good quality 360 degree protractor was attached to the CD. A small piece of thin enamelled copper wire was soldered behind the dial cut-out as a reference line. The capacitance of the diode was measured at each of the 10 degree dial markings, and a graph drawn up as per the variable tuning capacitor model.

In this case, the capacitance multimeter could not be used to measure the varicap capacitance. These devices use an internal oscillator, and so I was unable to get any sensible readings from my capacitance meter.

So I used a different method to calibrate the dial. A coil of known inductance was attached to the test terminals, and the dip oscillator was used to measure the resonant frequency at each of the 10 degree marks as the dial was rotated. The dip oscillator was coupled to a frequency counter and adjusted for the weakest dip so as to try and reduce detuning due to mutual inductance. I plotted the dial reading, in protractor degrees, against resonant frequency, as read on the frequency counter. These were entered into Excel, and using an equation for resonance, calculated the resulting capacitance for each frequency.

The equation was entered as a cell function for each value of frequency input. A graph was then plotted for the BA163 diode I used.

As the spreadsheet calculation and graphing was easily repeatable, I decided to try various power and zener diodes as varicaps to see if other diodes could also be used.

The results were interesting, and I found that zener diodes have some useful capacitance ranges with reasonably

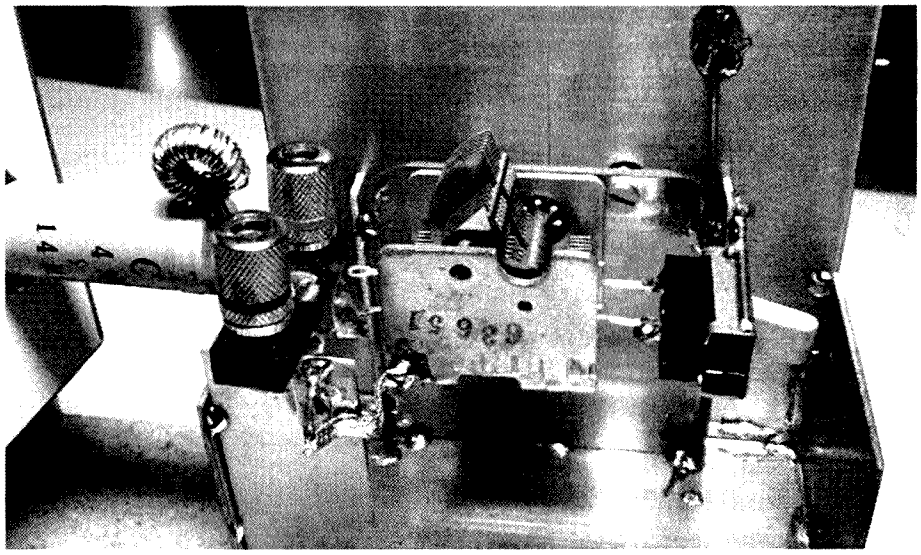


Photo 2: Rear view of the dip oscillator helper.

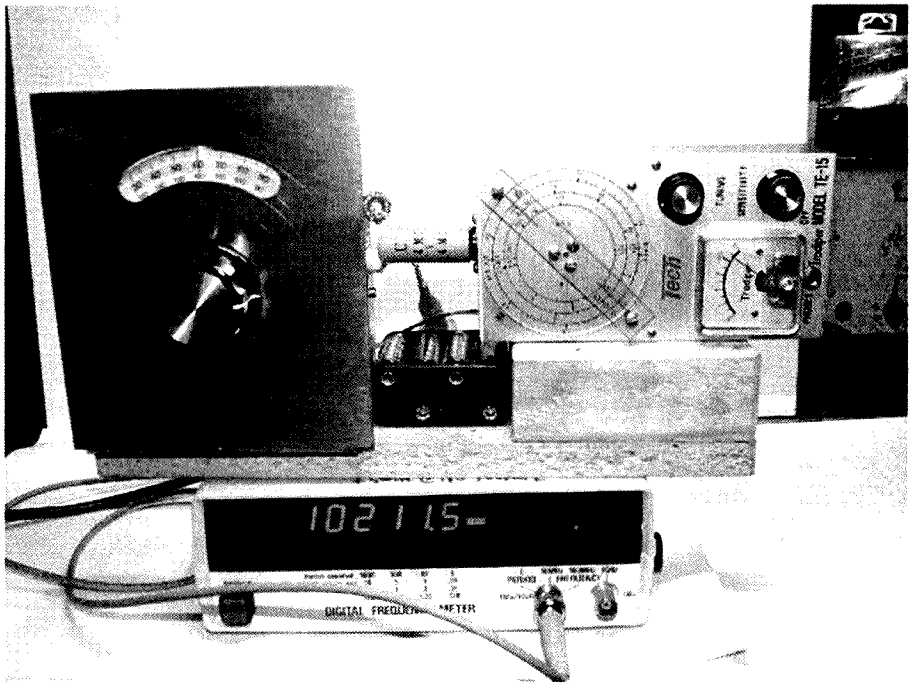


Photo 3: Front view of the varicap version.

low leakage losses. I also found that large power diodes can provide large capacitance swings. Modem power diodes have reasonably low reverse leakage and seem to be quite good as varicaps. A 20 amp Schottky diode from a PC power supply was found to go from 400 pF at 10 volts to 3000 pF at near zero volts!

There is also literature on the web, and in past publications detailing work done by others in this area, well worth looking up.

Below are some of the diodes I tested. The test voltage is from 10 volts to 0 volts.

Power and zener diodes

FR303 3 A fast diode: 33 pF to 103 pF.
BZX70C68 2 watt, 68 V zener diode: 174 pF to 478 pF.
LT406A07 6 A power diode: 66 pF to 272 pF.
MR751 power diode: 111 pF to 376 pF.
BZV85C12 zener diode: 20 pF to 45 pF.
1N5404 3 A, 400 volt power diode: 28 pF to 279 pF.
50P01 fast, high current diode: 404 pF to 3093 pF.

Switching diode

BA482 high speed switching diode: 0.7 to 1.2 pF – as you would expect for a low C diode!
(Corrected for stray C)

Varicap diodes

MV104 varicap diode: 30 pF to 95 pF.
BA163 Varicap diode: 12 pF to 285 pF.

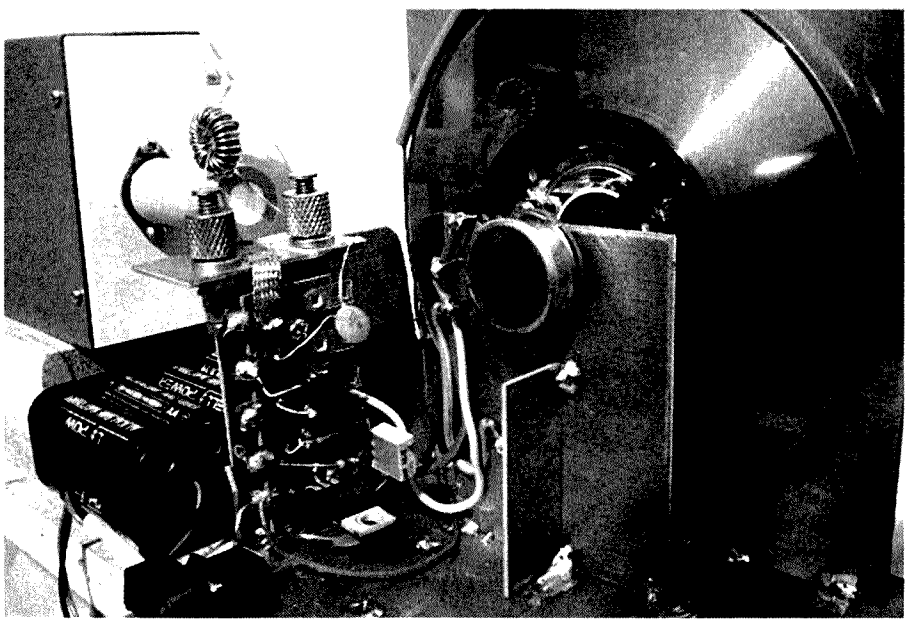


Photo 4: Rear view of the varicap version.

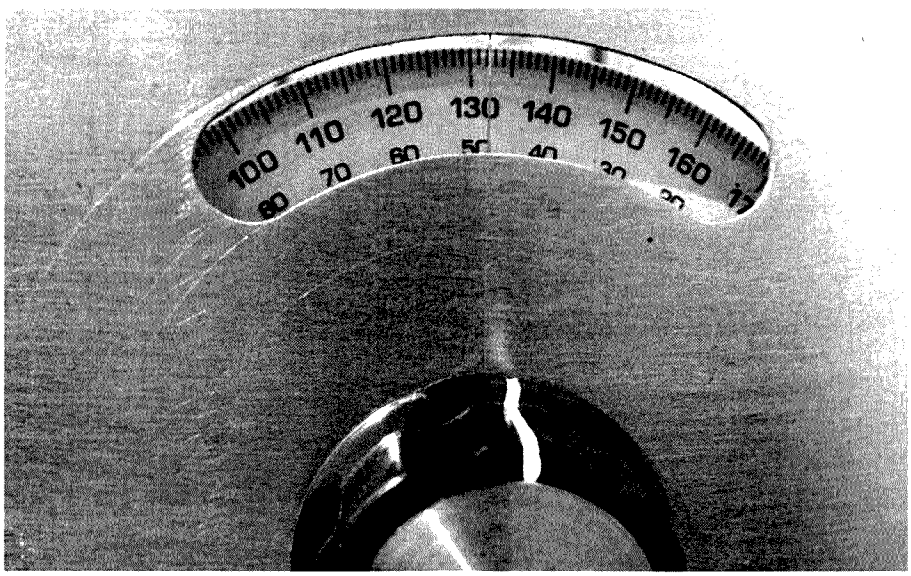


Photo 5: Dial scale of the varicap version.

Parts list

Mechanical capacitor version
C1: Dual gang AM broadcast tuning capacitor approximately 8 pF to 216 pF and 10 pF to 98 pF.
S1: SPDT switch to suit.
2 off screw terminals.
Knob with scale.
Bits of wood and double sided PCB for the construction.
Varicap diode version
2.5 mm DC plug wired to battery holder and 2.5 mm DC socket on unit.
Battery holder for 8 AA batteries.
C1: 0.1 uF monoblock ceramic.
C2: 1 uF 25 V working electrolytic capacitor.
C3: 0.1 uF disc ceramic.
IC1: LM317T adjustable 3 terminal regulator (2 volt or less dropout).
Knob and scale to suit.
L1: 1 mH RF Choke.
LED1: Blue led.
R1: 1.8 k
R2: 560 R
R3: 10 k
Terminals, to suit.
VR1: 10 k log pot 24 mm diameter.
VT1: 5 k 10 turn mini trimpot.
VC1: varicap diode to suit.
Drafting protractor - 360 degrees. Mine was a good European protractor unit with a thick bevelled pencil edge, and cost $4.00 from a large office supply company. It was exactly the same size as the CD!

If anyone is interested, I can supply copies of the Excel spreadsheets for the calculations and graphs for all the above diodes, and the calibration charts, and so on. Please email me at destefano@dodo.com.au

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Silent Key

Richard Cory ex VK2RP/VK4DIH

Richard Cory ex VK4DIH, and known as Dick, passed away recently at 92. He hadbeen an amateur radio operator for many years, initially in the Sydney area around Lindfield, and then North Ryde.

His call sign then was VK2RP, before he moved to Groper Creek in 2002 where he acquired a new call sign, VK4DIH. He passed away in a nursing home in Home Hill on 15th September, 2009.

Submitted by his daughter, Lyn Dowe. **ar**

Understanding and testing choke coax baluns

Paul McMahon VK3DIP

While one of the physically simplest forms of balun available, the coaxial cable choke style balun tends to be poorly understood. This article is intended to help with this understanding and to show simple ways that these sorts of baluns can be tested with readily available test equipment.

The coax choke style balun has been around for some time; early versions used quarter-wave stubs, sleeves, or even just large coils of coax. Most modern versions however, used by hams, tend to use some form of ferrite sleeve. All of these use the same basic principle of trying to place a high impedance (high at least relative to the load impedance) in series with the unwanted RF current flowing on the coax cable outer back down to earth. For an example of the use of this sort of balun see Reference 1.

Balun theory

To understand what is going on here we need to first talk a bit about the types of loads and or sources we are using. The normal three types a ham will come across are shown in Figure 1: Types of loads at the foot of this page.

The first two types, unbalanced and balanced, are probably the most commonly mentioned, and it is of course from these two that the BALanced to UNbalanced convertor or BALUN name comes. The third type, or floating is actually more common in practice but it is frequently left out of discussions. Also often left out is the full description of these types, which are:

- Unbalanced with respect to (typically) earth.
- Balanced with respect to (typically) earth.
- Floating with respect to (typically) earth.

In ham usage these are most usually with respect to an RF earth but they could be with respect to any reference point that made sense. Just to cut down on the number of words needed in this article it should be understood that when I say unbalanced or balanced etc. I mean with respect to RF earth.

While each of the load types shown in Figure 1 has the identical load impedance of R between the two input terminals A and B, the impedance from each terminal to earth is different as shown in the 'impedance by load' table below.

Typical ham examples of these types of load are things like:

- Unbalanced – yagi antenna with a gamma match, resistive dummy load.
- Balanced – folded dipole (centre tap earthed), multi-turn loop (centre tap earthed), ideal dipole.
- Floating – resistor in mid air, non-ideal dipole.

We have talked about these types applying to loads so far but they are equally applicable when talking about sources.

Typical ham examples of these types of sources are things like:

- Unbalanced – coaxial output of a transmitter.
- Balanced – centre tapped (earthed) output of a transformer/ATU.
- Floating – non centre tapped (non earthed) output of a transformer.

We can also talk about these sorts of things with respect to transmission lines but in this case there is really no floating type. Typical ham examples of these types of transmission lines are things like:

- Unbalanced – coaxial cable.
- Balanced – twin lead.

It is pretty straight forward to assume that the best way to connect an unbalanced source to an unbalanced load would be to use unbalanced transmission line, and similarly for the balanced case. The problem however comes up when the ham wants to connect, say, an unbalanced source to a balanced load.

Leaving out for the moment the complication of the transmission line, and just considering this problem at lower frequencies or even DC a simple connection between these two different types is shown in Figure 2 immediately below.

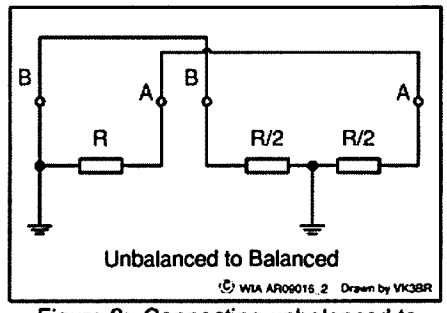


Figure 2: Connecting unbalanced to balanced.

	Unbalanced		Balanced		Floating	
Terminal	A	B	A	B	A	B
Impedance Terminal to Earth	R	0	R/2	R/2	Hi-Z	Hi-Z

Table: Impedance by load.

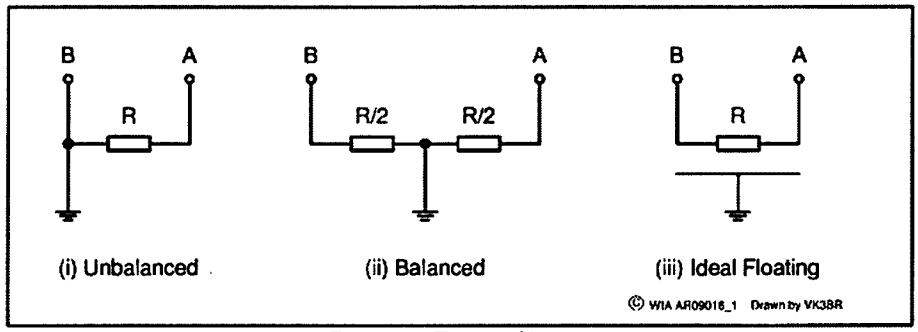


Figure 1: Types of loads.

Examination of this circuit shows the key problem with this sort of connection, effectively the left hand R/2 of the balanced portion is shorted out with both sides connected to earth. Apart from the resulting impedance mismatch of R to R/2 which would lead to reflections or matching losses, if the balanced component was a load and this load was an antenna there would be significant distortions in the current distributions in the antenna and thus the antenna pattern. While the ham would not normally want these bad effects, this sort of connection is often desired as in the case of connecting a transceiver to a wire (ideal) dipole.

This is where the concept of a balun comes in. A balun can be thought of as a black box with two terminals on each side, that is, four in all. One set of terminals looks like a balanced source or load, the other set looks like an unbalanced source or load. This device when inserted (the right way around) between the source and load of Figure 2 looks like an unbalanced load to the unbalanced source, and a balanced source to the balanced load. See Figure 3.

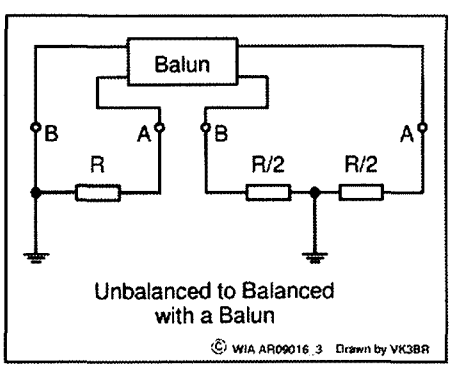


Figure 3: Using a balun.

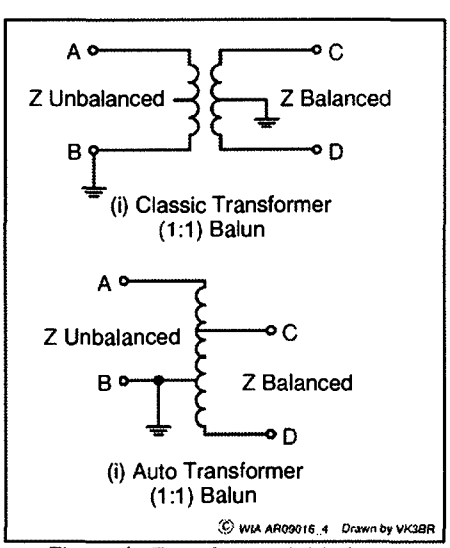


Figure 4: Transformer 1:1 baluns

One obvious method of making a balun, as we are talking about RF, would be to use a transformer. An advantage of a transformer would be that there is an opportunity to also change impedance from one side to the other based on the square of the turns ratio, if necessary. For many practical antenna cases we only need the one to one case so this could be realised using either of the schemes shown in Figure 4.

In ham work the more common of these two is probably the auto transformer case shown as item (ii); this is usually wound with a tri-filar (that is, three wires at once) winding to keep inter-winding capacitances even. Both of these schemes enforce the balance of the output side due to the hard earth centre tap, helping to counteract any unbalance in the load. Neither of these cases is, however, the choke style balun we are trying to get to, but a basic understanding of the story so far will help later.

So far we can see that connecting like to like (that is, unbalanced to unbalanced, or balanced to balanced), is good and unlike to unlike (that is, unbalanced to balanced) is bad. There is however the third type of source/load mentioned earlier, the floating case. Figure 5 shows the case of a floating source being connected to a balanced load.

This case looks very similar to Figure 2. The only difference being that the B terminal on the source is no longer earthed. In this case the left hand R/2

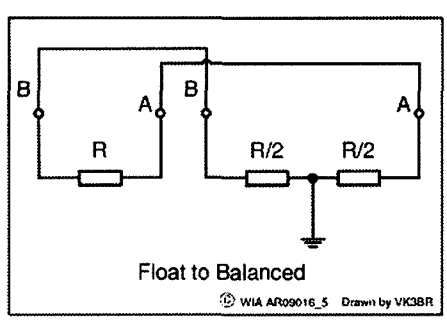


Figure 5: Connecting a float to a balanced.

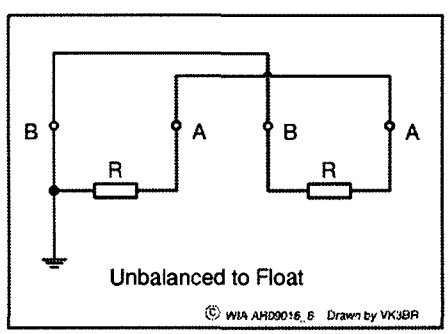


Figure 6: Connecting unbalanced to a float.

is no longer shorted out so matching is fine and while we are not reinforcing the balance of the load we are also not doing anything to distort it, so our ideal dipole can stay ideal. So connecting a float to a balanced is also OK. Similarly, Figure 6 shows the float to unbalanced case.

Here also there is no particular problem so we can see that basically float to anything is fine; all we need is a means of obtaining it.

Figure 7 shows two similar looking cases of an unbalanced source connected to a load via nominally unbalanced transmission line, that is, coax.

The difference between the two cases is that in (i) both the load and the outer of the coax are connected directly to earth at the load end, and in (ii) they are still connected to earth but only indirectly via the outer of the length of coax to the earth at the source end.

As any ham knows who has tried to get a good earth in a second story shack, an earth on the end of any length of wire quickly becomes a not very good RF earth as the length of wire gets greater. This effect is caused by the primarily inductive reactance of this length of wire, which in our case above is the outer of our bit of coax.

By the nature of the coax transmission line the power flowing inside the coax doesn't experience this as the inductance is effectively cancelled out by the cable capacitance, but on the outside there is no capacitance, and currents flowing here only see the inductance. This effect can be represented by a combination of an ideal float to unbalanced converter (which we might call a FloatUn) with one side of the floating output connected to earth via a primarily inductive reactance.

Effectively we have separated the currents flowing here into the desired

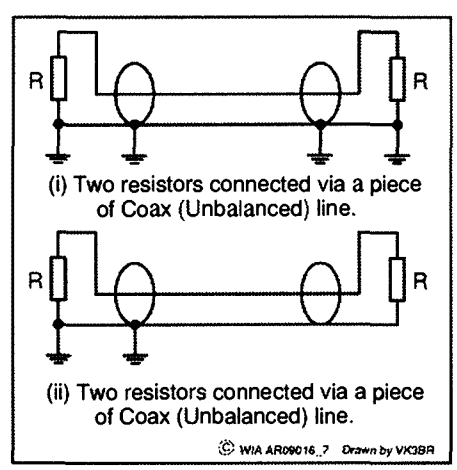


Figure7: Coax transmission line.

ones flowing on the inside of the coax, that is, through the ideal FloatUn, and the non desired currents (that flow on the outside of the coax) flowing through Z to earth. This is shown in Figure 8.

We can see that if Z is sufficiently

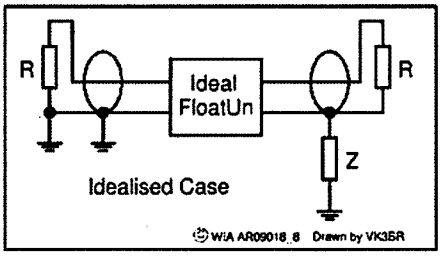


Figure 8: The idealized case.

high compared to R so that the unwanted current becomes negligible, then our piece of coax can behave as an ideal float to unbalanced converter. The value of Z without adding anything else to the outer of the coax depends primarily on the length and configuration (that is, if it is coiled or straight) of the coax. Further, as seen above, a float can connect happily to a balanced so in fact a long enough piece of coax, especially if it is coiled, will work perfectly fine as a balun.

While in extremes you could manage with just the coax it is usual to add bits to the end in an effort to increase the value of Z. In practice Z can be made up of inductive reactance, and loss resistance, the latter especially if a ferrite sleeve is used. Similarly the use of quarter-wave sections with the short to the cable braid a quarter-wave away from the load end is achieving the same thing, as a quarter-wave away from a low impedance (that is, short) is a high impedance.

A number of ferrite beads or sleeves at the load end are especially convenient for increasing Z as they- at lower frequencies due to their high permeability - increase the inductance; and at higher frequencies permeability decreases but loss resistance increases more. Because of this it is possible to make quite wide band Floatuns that can be used as baluns as opposed to the narrow frequency dependence of a quarter-wave section. It is also of course possible to make wideband transformer style baluns but that is another story.

At this point just to fit in with convention I will drop the name Floatun and stick with common usage of calling this a choke coax balun, or just balun for short. The choke of course comes from the description of the virtual component Z which is effectively performing the role of a RF choke for the unwanted RF current. While the device is not in itself balanced, we have said that its floating output is compatible with a balanced input, so this device can perform the function of a balun, so for simplicity we call it a balun.

It is possible in some special cases that you may need to counter the effect of a finite value of Z effectively unbalancing a load. One of the ways this can be achieved is discussed in References 2 and 3. In most cases however the simple case described above will be adequate.

One thing to watch out for with using ferrites is that if you do not have enough to make the choke Z high enough or if you are dealing with very high power then any current flowing in the 'choke' will cause I^2R losses in the ferrite loss resistance and thus heat which will in turn lower permeability and increase losses leading to a runaway effect.

So it is important that you know that you have added enough ferrite not just to know that the balance of your antenna is unaffected. It is of course possible to theoretically calculate how much ferrite is needed, assuming you have access to appropriate data sheets for the ferrite you want to use.

For the typical ham however, who wants to use those nice looking beads he bought lots of on special, but which he hasn't been able to get data for, this can be a problem.

Which brings us to, how do we test a balun?

Balun Testing

While the techniques discussed here can be applied to many different sorts of balun devices the focus here is on the choke coax balun.

The simplest way to measure a balun's effectiveness is to connect it up through the appropriate adaptors to your vector network analyser, or failing that your vector impedance meter. If, however, like most hams you do not have either of these there are other techniques that can be used with no more than a transmitter and VSWR/power meter. A signal generator, return loss bridge, and calibrated attenuator/receiver are helpful but not essential.

Both of the two techniques to be described here require at least a small amount of construction of a special jig to mount the balun under test on. There is not a lot required of the jig, which basically consists of a sheet of PCB material to form an earth reference plane and a couple of connectors of whatever variety you use. In my case the PCB was about 20 cm square, and the connectors I used were 'N' type, both through-hole chassis mounting, one solder to female, and the other, female to female. Placement is not critical, pretty much wherever is convenient will do. See Photo 1. In theory the reference plane should be infinite but again pretty much what ever you have got will do so long as there is a very good earth connection between the two connectors, and there is room to solder on the bits of balun you are trying to test. See Photo 1: The base test jig.

In both cases I will describe the tests here only in terms of a transmitter and VSWR/power meter but as mentioned a RLB if you have one will actually give more detailed readings. For more details on a suitable RLB and how to use it, see Reference 3.

Test 1: The centre tapped load

The first of the two types of test uses just the female to female connector. This test basically uses the cases diagrammed in Figures 2 and 5 above, where we discussed the connection of a float to a balanced. In this case if the balun under test is working correctly as a float source then when we connect an appropriately valued centre tapped balanced load we

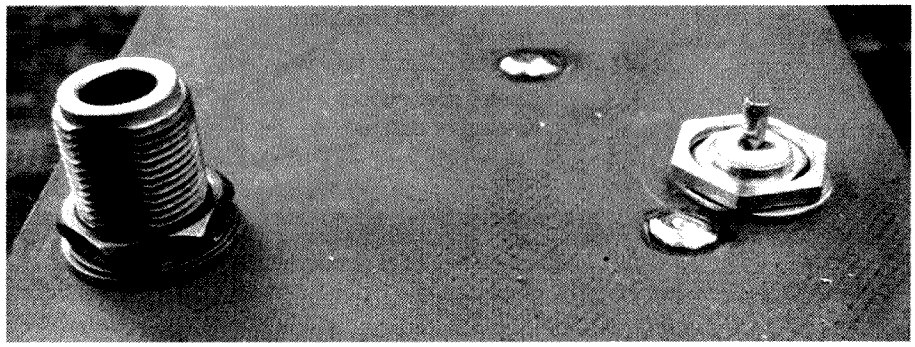


Photo 1: The base test jig.

should have a good match and thus close to 1:1 VSWR. In a 50 Ω system this would mean using two 25 Ω resistors (each made from say 4 x 100 Ω resistors in parallel). If the balun is not working well we should get somewhere from, ideally, a 2:1 VSWR in the no balun case to a 1:1 if we lift the connection between the resistors centre tap and earth leaving two 25 Ω resistors in series to form a 50 Ω load.

The test setup would be as diagrammed in Figures 9 and 10.

You should test your setup with a multimeter on a low Ohms range before applying any power, and without the VSWR meter attached you should measure a DC resistance across the input connector to the jig of 50 Ω with the centre tap NOT earthed to the reference ground plane, and 25 Ω with the centre tap connected to the reference plane. In my case I just tack solder the centre tap to the PCB as required rather than use an actual switch.

This is a very straight forward test; connect the transmitter and VSWR meter up to the jig and start with a short (30 cm or so) length of coax with no ferrite sleeves etc. connected to the load with the centre tap floating. This should give you an indication of the best possible VSWR you will be able to get with your test setup.

If you can't get a good VSWR at this point without the balun then rearrange the load and don't continue on until you do. At HF the lead lengths and configuration of the resistors should not be a big issue, but as you move to VHF you will need to be more careful and possibly even start to use leadless components.

Of course if you are using a transmitter you do need to ensure that the power ratings of the resistors in the load matches the power you will be transmitting otherwise they will go up in smoke. If you use, say, two lots of four 100 Ω resistors in parallel / series or eight resistors in total the total power you can use is eight times that of a single resistor. These resistors should not be wire wound types.

Once you have a good VSWR in the floating centre tap case you can move on to starting to add ferrite cores and observing the change in VSWR, if any, when the centre tap is earthed. The optimum is to get to there being no noticeable difference between the two cases with both being some good, that is, 1:1 value, but in practice if you can get to an acceptably low VSWR then as far as this test is concerned if, when you connect your Balun to a real antenna or whatever, you get a bad VSWR then it is not the balun that is causing it.

A real limitation of this test is the power handling capacity of the load resistors. If you are using a RLB and signal generator this is probably not an issue, but if your VSWR meter needs 10-20 watts before it starts reading then getting a good load could be a problem. This test also does not give you a good feel for losses in the ferrite cores but it is really simple, and worst case you will burn up some resistors.

Test 2: 'It's Magic'

The second type of test also uses the second connector on the test jig and relies on the discussion around Figure 6 above, where we said you can happily connect a floating source to an unbalanced load. In fact if it is a truly floating source the load can be earthed on either end of the load so if your balun (coax choke version) is a true floater then you can connect the wire coming out of the centre of the end of the coax after the ferrite to earth and take the braid out to connect to a load!

The test setup for this is shown in Figures 11, and 12.

You will note in Figure 11 it shows a scrap of PCB being used as a sort of launcher for the solder pin style connector. I found I needed this at VHF to get a reasonable VSWR/return loss; try out your version at the frequency of interest with no ferrite and the connections the usual way around (that is, braid to earth and centre to centre) using a known good dummy load on the output and see what VSWR you get. If it is good enough then you may not need it. If you do have a VSWR problem then have a look at Photo 2 to see how I did it. The bit of PCB had the clearance for the connector pin made using a nibbling device, in my case.

When you have put one or more ferrite sleeves on to test your 'balun' and with the output connected braid to centre pin, coax centre to reference earth, a test with a multimeter on a low ohms range should show a hard (DC) short to earth at the input connector.

However when you connect up the transmitter and VSWR meter to the input and a suitable 50 Ω dummy (or otherwise) load to the output connector you should see a non-infinite VSWR.

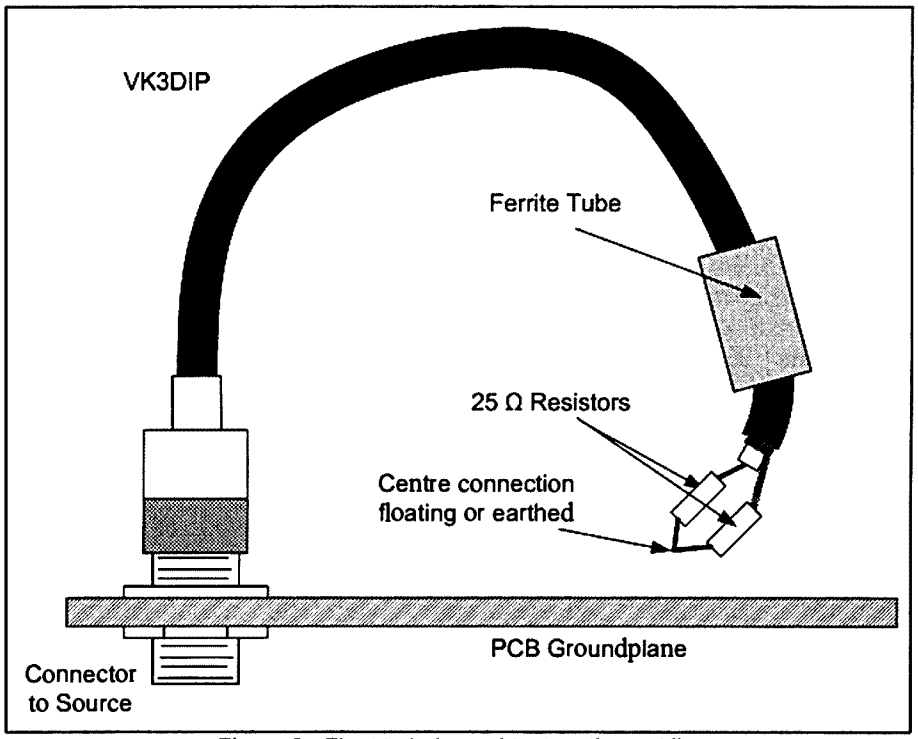


Figure 9: Float to balanced test on the test jig.

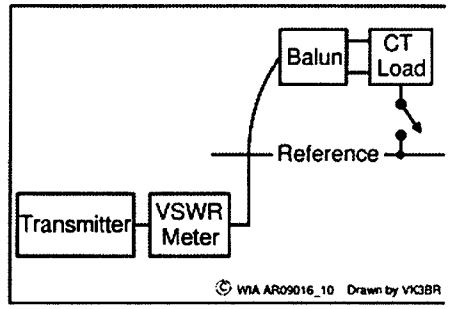


Figure 10: Equipment setup

Further if you move the VSWR meter over to the output port between the jig and the dummy load and use it as a power meter you should see very little power being lost in the balun, that is, power-in pretty much equals power-out. A little bit of caution is required with this test; if you transmit high power and your 'Balun' doesn't have enough ferrite then your transmitter may see a very bad VSWR. It is safest to either only do type 2 tests after you have successfully done type 1 ones, or alternately always start with too many ferrite sleeves and take them off one at a time until the VSWR starts to increase rather than vice versa.

The difference in power readings in and out for this test represents for the main part power being lost in the ferrite. As you add more ferrite you should see this power loss decrease (and VSWR get better).

This test provides much more information than the first one and has no particular problems with power. If you have a suitable high power dummy load you can test with whatever power levels you like and actually measure the temperature rise, if any, in the ferrite.

This test is also very good at convincing people that a coax 'balun' actually provides a true floating output. It can be a nervous time the first time you transmit into what looks very much like a wrong and counter intuitive connection, but after a couple of times of connecting the output to the braid and centre to earth it does not seem so bad.

General comments and conclusions

While the output from a piece of coax is conventionally seen as unbalanced it will not always be so. If the coax is not earthed at the load end, and if either the length of coax is long, or something like ferrite is added around the outside, then the output of the coax will actually be more of a floating one.

Even though the output from a piece of coax may be floating it can still perform the function of a balun.

The simple tests detailed here can quickly show you how well your homebrew 'balun' is working, and/or if that surplus ferrite is any good.

If you have a need for DC earthing the feed in line from your antennas then you can make up a boxed version of test 2 and bolt it to your shack (or tower) earth system.

The minimum length of coax used for either test 1 or test 2 seems to be reasonably short; around 30 cm works fine for me, but if you get strange readings try it with a longer piece. In fact test 1 and 2 will also work with coax baluns made out of just long lengths of coax coiled and otherwise.

Coax choke baluns are very simple to build and test and work remarkably well across a wide band of frequencies. It is truly surprising just how well a length of coax works all by itself.

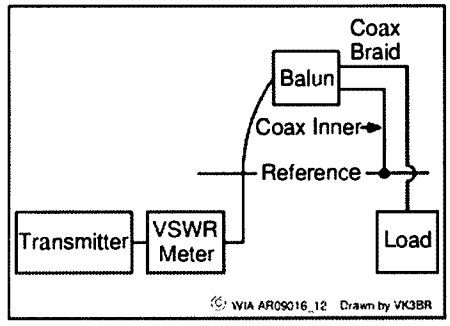


Figure 12: Reversed connections test equipment connections.

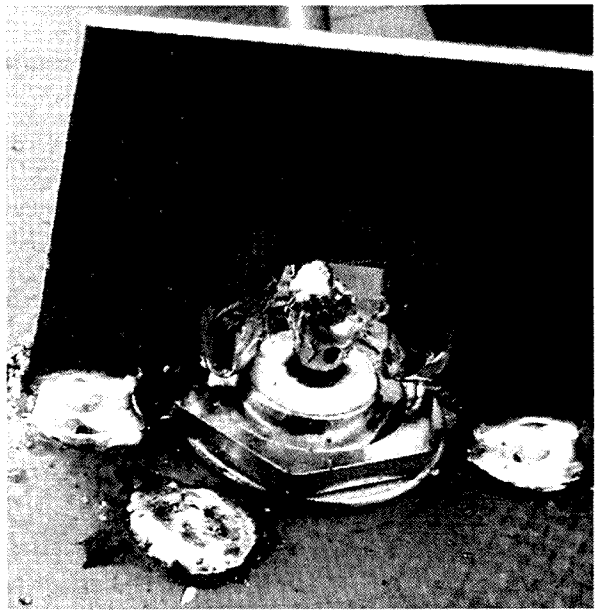
Further reading and references

'Simple Wideband Yagis for 2 m and 70 cm' by Paul McMahon VK3DIP - Amateur Radio Magazine September 2008.

'A Simple Wideband Return Loss Bridge Revisited' by Paul McMahon VK3DIP - Amateur Radio Magazine June 2007.

'Further Reflections on a wideband return loss bridge' by Paul McMahon VK3DIP - Amateur Radio Magazine August 2008.

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Photo 2: 'Launcher' on jig output connector.

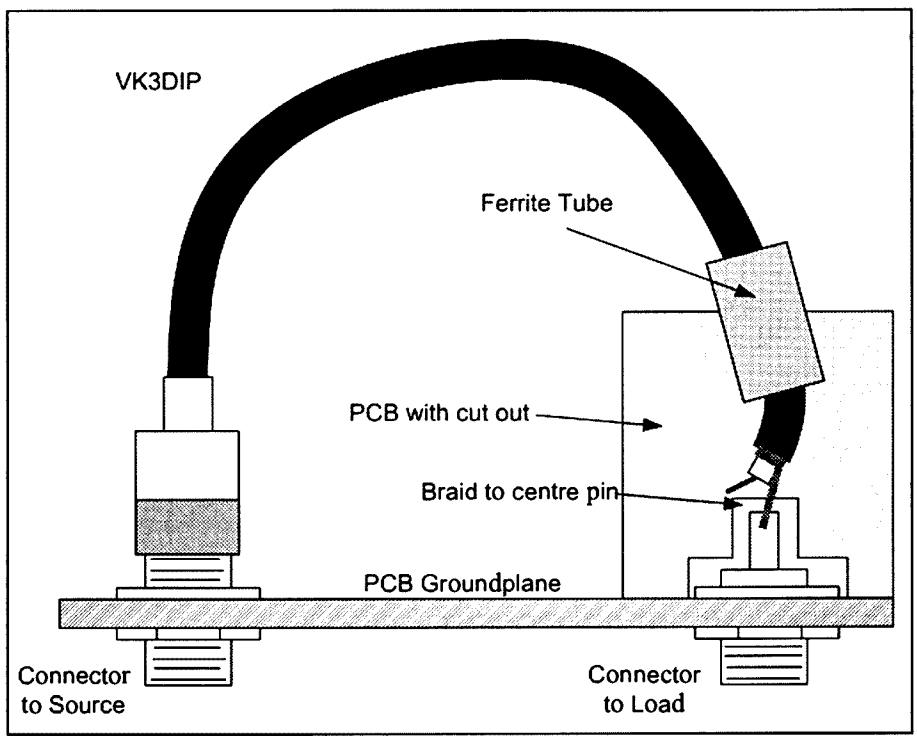


Figure 11: Reversed connections test.

Simple tools

A surface mount component soldering aid

Jim Tregellas VK5JST

In the immortal words of one of those children in one of those television commercials "Slippery little suckers, aren't they?"

I have done quite a bit of surface mount soldering and find this little aid invaluable.

It is placed on top of a component which is being hand soldered, and prevents any movement that may be caused either by vibration or by the surface tension of the molten solder.

Making it is simple. It is fabricated from standard 1.6 x 20 mm aluminium flat section which can be purchased conveniently at your nearest hardware store, and 1.6 mm thick PCB from which all copper has been removed.

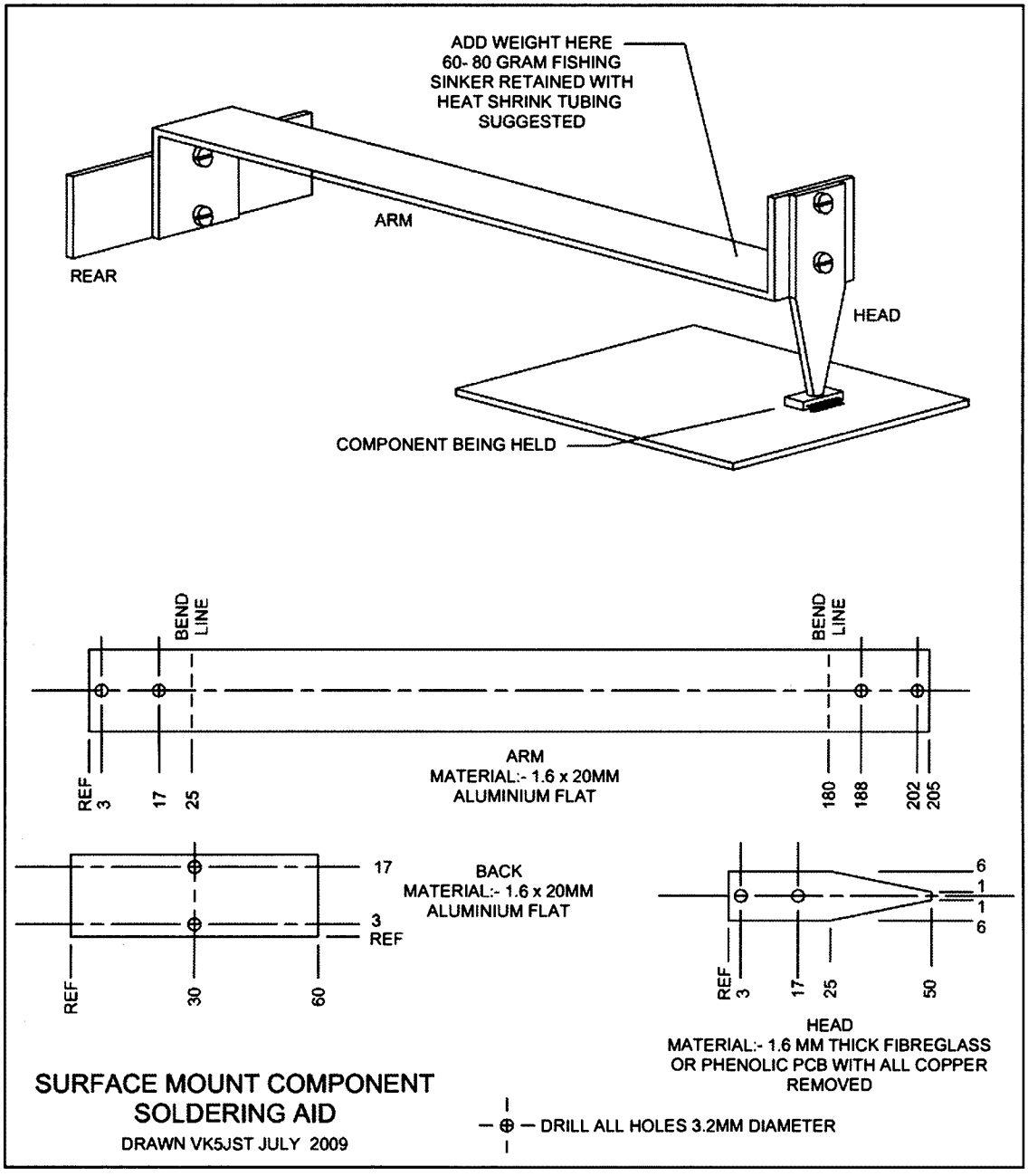
With the dimensions shown, the jig can reach to the centre of a PCB 300 mm square. If you are working on a bigger PCB (wow!) simply extend the arm length.

An added weight of around 60 - 80 grams is about right to stop all component movement, but more can be safely added if desired.

I usually work inside an old tea tray stolen from the kitchen that catches all of the escapees before they can reach the workshop floor.

Good soldering.

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The surface mount component soldering aid.

Simple tools

Test tweezers for surface mount components

Jim Tregellas VK5JST

Have you ever received a shipment of surface mount components where the tape has separated on several different component types and the result is a potpourri at the bottom of the box?

Or seen some wonderful SMT components on a motherboard, heated it with a hot air gun, given the assembly a sharp rap on the bench and formed yet another variant of the same potpourri? Or even worse, mixed up some carefully selected and unmarked capacitors during assembly? You need these tweezers.....

The diagram says most of what is necessary. To assemble the tweezers, first cut out the five parts from whatever scraps of FR4 fibreglass PCB you have lying around.

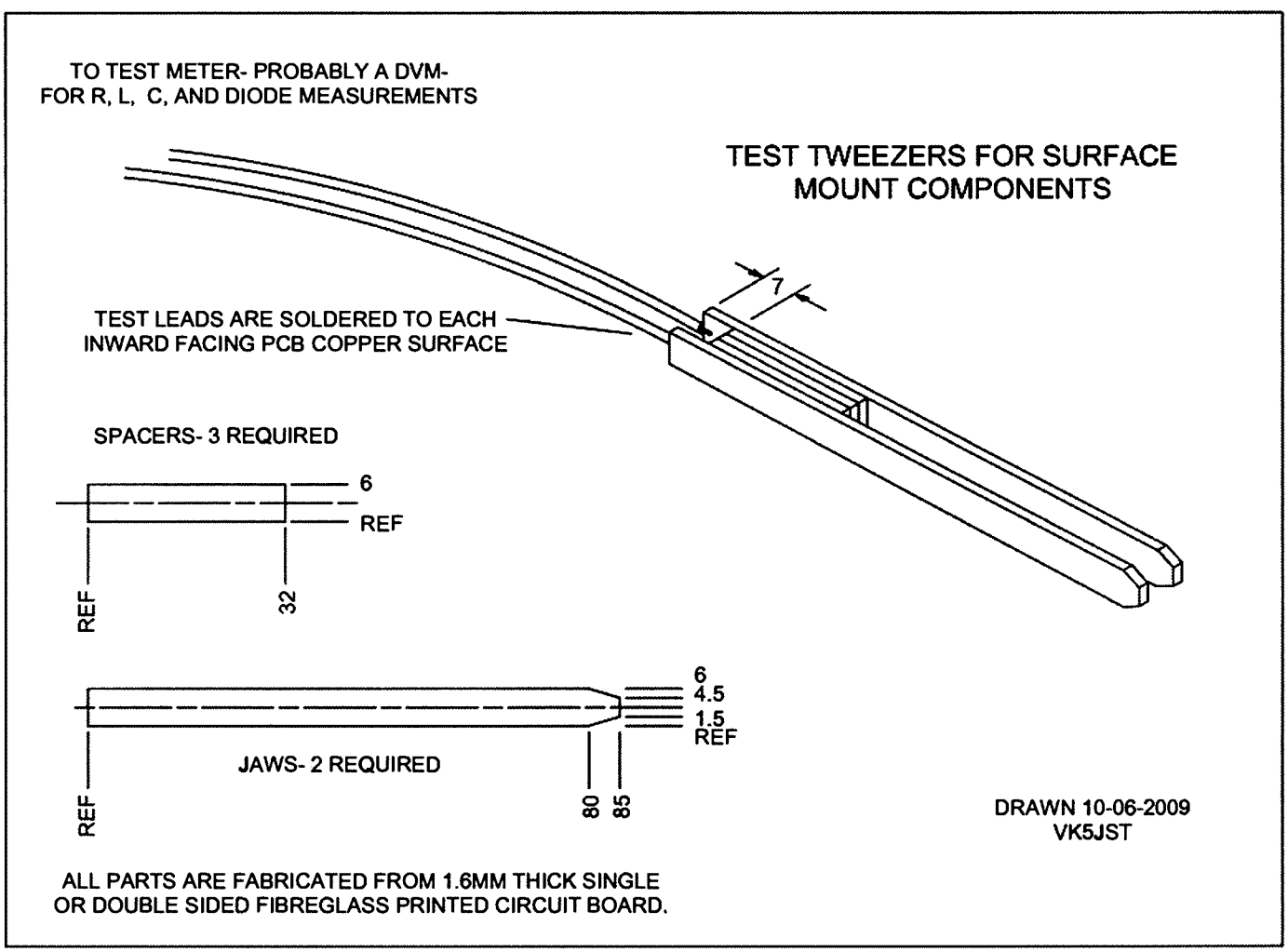
Carefully clean all copper surfaces with steel wool and then, using a few drops of superglue, stick the three spacers together to form a block 4.8 mm thick, 6 mm high, and 32 mm long.

Next stick this block to each of the jaws as shown in the drawing. Solder on your test leads, and finish off by covering the spacer area of the tweezers with heat shrink tubing.

All done!

With a half decent DVM which has resistance, capacitance, and diode measuring features, you can now identify and test most of those mysterious little unmarked blobs.

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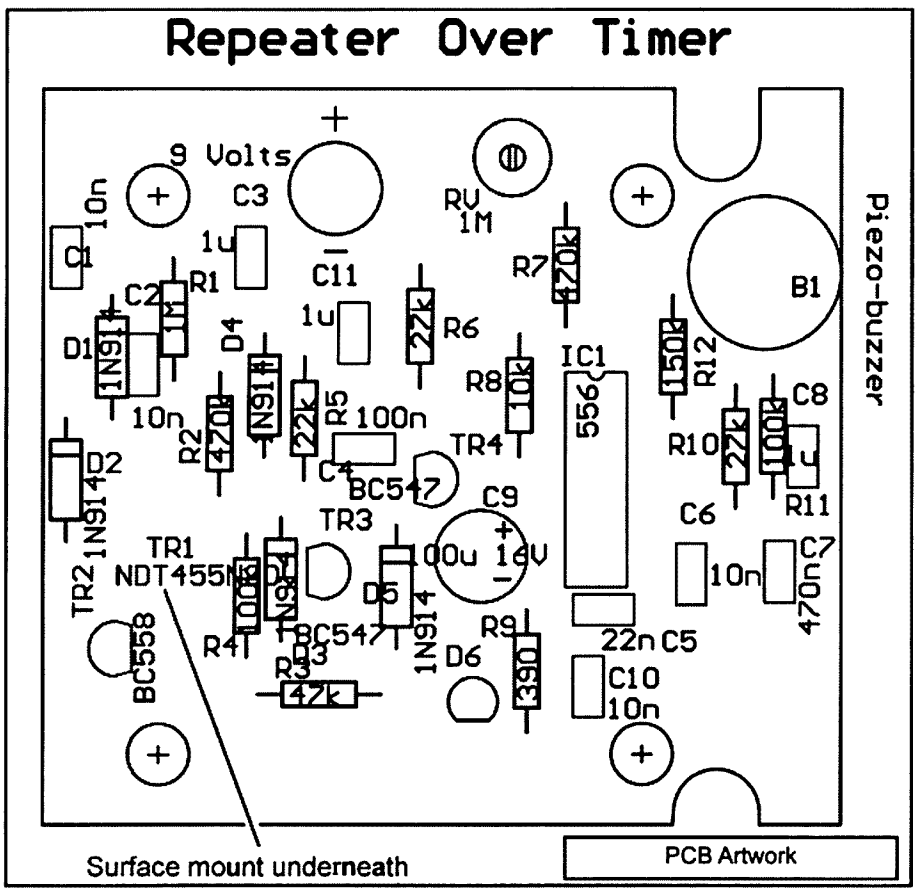


The test tweezers.

A repeater over-timer

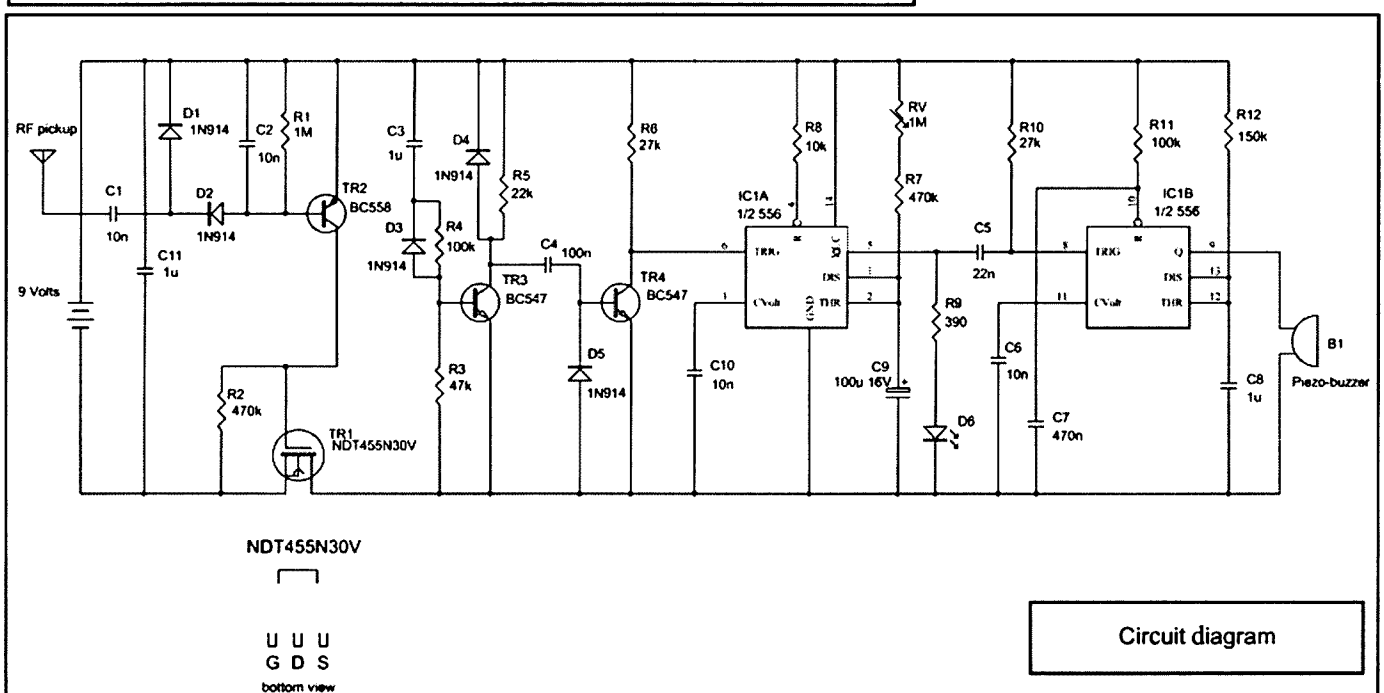
Keith Gooley VK5OQ

Here is a simple timer that beeps after a preset time following the start of transmission to remind the operator not to time out the repeater. It has made a good club project at the Elizabeth Amateur Radio Club here in VK5, enabling members with only limited construction experience to improve on their skills and make a useful gadget in the process.



If you are like me, and I suspect many readers are, then now and again while chatting on a repeater, you get carried away and time out the repeater. A discussion with a friend or a club net can be interesting and engrossing and you can tend to forget time. There have been several attempts to get over this problem in the past. References 1 and 2 give two versions of a timer using a pair of 555-type timers; the second adds an RF actuated facility so that no access to the transmitter PTT line is required. Jim VK5TR (formerly VK5JST), Reference 3, uses a microcontroller to add a "bell and whistle" or two.

The timer presented here is based on Reference 2 but goes a step further in that it is RF actuated but draws only leakage current from the battery when not in use. This means that the timer can be left connected to the nine volt battery and current is only drawn when the VHF or UHF transmission starts. After the beep at the conclusion of the timing period and the operator lets go of the PTT, the circuit switches off to once again only draw a very small current from the battery. Current drawn did not register on the



writer's DMM, which has a resolution of 0.1 microamp.

Circuit Description

The timer circuit itself is centred on IC1 and is essentially the same as that in References 1 and 2. In the quiescent condition with no RF being picked up on the antenna, TR2 is off and so is TR1. This latter device is an N channel MOSFET acting as a switch in the negative lead to the battery. In this condition there is only the leakage current in the MOSFET drawn from the battery. The drain to source diode built into the MOSFET is also reverse biased.

RF coming into the pickup is rectified by the voltage doubler rectifier D1, D2 and the associated capacitors. When the voltage across C2 reaches about 0.6, TR2 turns on pulling the gate of TR1 towards the +9 volt rail. This turns on TR1 applying nine volts to the timer. The two halves of the timer IC are connected as mono-stable multi-vibrators which start the timed period when a negative-going trigger pulse is applied to the trigger pin. As mentioned before the circuit is similar to those published in References 1 and 2. However I found that a better trigger circuit was required in this case where the RF controlled switching can cause the supply volts to be turned on and off several times in succession. TR3 and its associated components provide a delay of about 100 ms or so after the 9 volts is applied before TR4 is turned on. When this occurs, the trigger pulse of about 20 ms is generated. The delay gives the two timer circuits time to settle before the first timer is triggered.

The negative pulse on pin 6 of IC1A starts the main time delay during which the operator will be chatting away on his transmission. RV, R7 and C9 determine the timer period and are therefore the ones to adjust if you want to change the range of adjustment. Pin 5 goes high during the timing period and the LED, D6, is lit. At the end of the period, the second timer is triggered and pin 9 goes high, sounding the piezo-buzzer for about half a second.

The operator is thus reminded he has been yacking on for long enough on the repeater or some might say too long and the PTT is released.

RF pickup

Some experimentation may be required with the arrangement of the RF pickup. A simple length of wire laid near the rear of the radio will be adequate in some cases. Winding the wire around the coax cable a few turns may improve the reliability. In other cases winding the wire around the coax and taking it back to the timer box will be an arrangement less susceptible to RF pickup from other sources such as nearby broadcast stations [3]. The returning wire should be connected to the + battery terminal. It is difficult to be too specific about the precise type of RF pickup required as it depends on the power level of the VHF or UHF transmitter and the level of leakage from the coax.

Construction

The Elizabeth Amateur Radio Club has produced a kit for this project, including a professional PCB. The constructor can use the kit or, of course, make his or her own PCB or build the project on strip board or whatever. The PCB is designed to fit in a nice plastic box, Hammond type 1593N along with the 9 volt battery. Photo 1 gives an idea of the layout, and size, of the unit. Photo 2 is the complete unit.

All references to the PCB assume the board is oriented with the components side up and the piezo buzzer at the top right hand corner. The four holes for the pins should be drilled out to 1.0 mm and the three for the trimpot RV to 1.1 mm. The single pad between the upper end of R1 and C1 is not used.



Photo 1: Completed PCB in the case with battery.



Photo 2: Complete unit

This is a good project to get started with SMD components because TR1 is one of the largest types of SMD devices available and should be able to be handled by most constructors. Also if you do happen to drop it you have a good chance of finding it again. TR1 should be soldered first to the bottom of the PCB. Hold the device in place carefully aligned with the pads. A toothpick is a good help with this. Solder one of the small pads. Check the alignment again and correct if necessary. Solder the remaining pads and check for shorts.

Turn the PCB over and insert the four diodes and the resistors first. They require the leads to be bent to suit the 10 mm (0.4 inch) pad spacing. A lead bending jig is useful for this if one is available. Once a few components have been inserted in the PCB, turn the board over flat on the bench and solder the leads in place. Some light pressure of the board will ensure that the components are pressed against the board.

Repeat for the remaining resistors and diodes and trim the leads. Fit the '556 (IC1) ensuring the notch in the end of the IC is uppermost. Insert the remaining components and solder them in place. The piezoelectric buzzer should be inserted with the + sign to the top. Solder the four pins in place for the battery and RF pickup.

Drill a 5 mm hole in one of the box end plates for the LED and a 2 mm hole in the other for the RF pickup. While we are drilling, it will be found useful to drill several holes in the box lid above the buzzer. Wire the LED to the PCB using the supplied hook-up wire. Ensure the pin next to the flat on the LED is connected to the lower hole of D6 on the PCB. Solder one end of the 500 mm length of hook-up wire to the pin nearest the top left corner of the PCB and feed the wire through the 2 mm hole in the second end panel. If a shielded pickup (coax cable) is required, solder the centre conductor to the pin nearest the corner of the PCB and the braid to the adjacent pin.

Solder the battery snap wires to the 9 volts + and – pins, red to + and black to the –, of course. The PCB is fixed to the case with either three or four screws; some case halves have only three mounting holes.

Testing the Timer

Fit a 9 volt battery to the snap or connect a bench power supply set to 9 volts. Correct operation may be tested without RF being applied to the pickup wire by connecting the top end of R2 to the positive battery lead using a clip lead.

The LED should light as soon as the clip lead is in place. After the preset time the buzzer should sound for about one second and the LED go out. The preset time is adjusted using RV from about one minute to three and a half minutes. If it is desired to reduce the length of the beep, reduce the value of R12 and conversely increasing R12 will increase the length of the beep.

If all is well, disconnect the clip lead and test the timer with RF from a handheld or other transceiver. As soon as RF is applied, the LED should go on and timing commence. Holding a HH with one watt output anywhere near the timer should be sufficient.

A 2 m mobile radio with 10 watts output will operate the timer with the pickup lead wound around the antenna coax four or five turns. Use of a higher powered radio will require less coupling. If a low powered radio is being used and/or the coax is well shielded it may be necessary to remove 20 mm or so of the sheath of the coax in a convenient position and pass a thin wire under a few wires of the braid. Use the minimum coupling required to operate the timer. Tape up the modified area of the coax.

Conclusion

A simple timer has been described which will remind operators on repeaters when they have been talking on the repeater for long enough. The project has been a good one for the Elizabeth Amateur Radio Club, enabling experienced and less experienced members alike to build a useful device for the shack. Kits for the project are available from the Club. Refer to the advertisement in *Amateur Radio* magazine or go to the Club website at www.earc.org.au

References

1. Austermiller, Keith KB9STR - "An RF Driven On-air Indicator" *QST* August 2004, page 56.
2. Poland, Allen K8AXW - "RF Activated Timer" *QST* January 2007.
3. Tregellas, Jim VK5JST - "The Sniffit" *Amateur Radio* October 2008

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Parts list for Repeater over timer.

Item	Value	Jaycar #	Quantity	Details
Resistor	470k	RR0636	2	
Resistor	1M	RR0644	1	
Resistor	100k	RR0620	2	
Resistor	47k	RR0612	1	
Resistor	22k	RR0604	1	
Resistor	27k	RR0606	2	
Resistor	10k	RR0596	1	
Resistor	390R	RR0562	1	
Resistor	150k	RR0624	1	
Diode	1N4148	ZR1105	5	
IC	556	ZL3556	1	
Buzzer		AB3459	1	
LED		ZD0152	1	
Capacitor	10n	RC5348	4	
Capacitor	1u	RC5499	2	
Capacitor	22n MKT	RM7085	1	
Capacitor	100u	RE6130	1	
Capacitor	470n MKT	RM7165	1	
Capacitor	100n	RC5360	1	
Battery snap		PH9230	1	
Screw	#4 X 6	HP0550	4	
Trimpot	1M	RT4028	1	
Pin	0.9mm	HP1252	4	
PCB			1	
MOSFET	NDT455	36799	1	Rockby
OR	IRLL014		1	Futurelec
Transistor	BC547	ZT2152	2	
Transistor	BC559	ZT2166	1	
Plastic case	Hammond	1593N	1	
Hookup wire			100mm	X2 ribbon
Hookup wire			500mm	RF pick-up wire
Battery	9 volt		1	

Birdsville area emergency — Amateur radio raises the alarm

Richard Neilsen VK2LET

While on the Blue Mountains Amateur Radio Club DXpedition to Poeppel Corner where VK8, VK5 and VK4 all join we proved that amateur radio is an extremely efficient and fail safe means of communications.

Returning to Birdsville after the 240 sand dunes each way to Poeppel Corner, we refuelled and restocked for the rest of the trip, which still had two other corners, Haddens Corner and Cameron Corner, yet to travel to.

The corrugated roads were slowly taking their toll on the older of the cars in the convoy and the two members in the Pajero, Kevin VK2FTTP and myself, Richard VK2LET had to stop to repair the UHF CB antenna that had rattled loose on the bull bar.

While pulled over, a white van stopped to ask if we required any assistance; after waving the driver off we noticed that he had a flat tyre on the rear of his van, and we tried to warn him but to no avail, and off he drove into the dust.

After a couple of minutes back on the road we heard on the UHF CB that there had been a roll over on the road ahead of us.

Once we arrived we found that this same white van had got out onto the loose shoulder of the road and lost traction; the driver had apparently over corrected and the tyre was shredded from the rim; he had rolled his van three times and it was on its side, leaving him with his head pinned under the pillar and his arm out the door and trapped under the side of the van.

While on the road prior to this event, we had had the pleasure of speaking to many other operators and they were all eager to keep in touch and follow our trip. Kevin VK4KKD from Browns Plains was one of the operators that we spoke to regularly and his cracking signal and arm chair audio meant that we heard him wherever we were.

We, and the trapped driver, were very lucky that when we arrived at the accident scene VK4KKD was already on the frequency. So Kevin VK2FTTP gave Kevin VK4KKD a call and advised him of the situation and he asked all others on the frequency that there was a serious situation and only transmissions between the two of them for the time being.

Richard VK2LET, with others who had arrived on the scene, helped to free the trapped driver and provide first aid while the two Kevin's exchanged details of the situation. From Browns Plains, Kevin VK4KKD called 000 and passed the details on to the Queensland Ambulance Service.

This is where it all got hard, with the 000 operator wanting to know where in Brisbane Birdsville was and what the name of the nearest intersection was to the longitude and latitude that we had given them.

They eventually determined that we were on the Birdsville developmental road about 135 km east of Birdsville. They advised the Royal Flying Doctor Service and made calls to the police and ambulance services in Birdsville.

The Flying Doctor Service sent out a nurse from a nearby station and she provided extended care to the patient and advised us that the ambulance and police were on the way from Birdsville.

While waiting for assistance, another vehicle from our convoy, with Ross VK2VVV and Chuck VK2SS on board, came back to assist. Ross is quite adept in first aid and was a great assistance to the station nurse.

Four police officers who had been helping out at Birdsville over the weekend of the races stopped as they were on the way back to Brisbane.

They did not have communications back to Birdsville and decided that the satellite phone would be of assistance. Once it was unpacked from the box and turned on they then decided that they did not know how to use it; a sight to behold, two police officers holding the sat phone while the other two read out the instructions. This was all to no avail, as they could not get a satellite to lock.

The ambulance and police arrived from Birdsville and took over. We gave some information to the police about what we knew of the incident, and advised them that we had called the emergency services by using HF radio and a network of devoted operators.

The driver of the van was very lucky in a few ways. If it had not been the week after the Birdsville Races he may have been trapped for some time before anybody passed him. Secondly that there were people on the scene that had a means of reliable communications, as there are no mobile phone communications out there.

A positive outcome for all those involved, and a positive outcome for amateur radio.

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Foundation Corner Three

The balun

Ross Pittard VK3CE
vk3ce@amateurradio.com.au

This month we look at a balun for the half wave dipoles discussed last month. All that is needed is a short length of PVC tube, an end cap and a length of coaxial cable which is your feed line.

As we learnt from the Foundation Manual, a balun is used to convert from a balanced element (the dipole antenna) to an unbalanced element (the coax cable). In this application its function is to reduce the amount of RF current flowing on the outer shield of the coax. This will maintain even radiation from your dipole antenna and reduce the likelihood of an RF burn from your coax in the shack!

The simplest form of balun to suit the job is what is called a choke balun. If we wind a portion of the feed line into a coil near the antenna the resultant inductance of the coil isolates the dipoles from the feed line.

The coil can be looped around and fixed with a couple of cable ties but the balun I am about to describe will be wound on a length of PVC pipe.

I purchased a metre length of premium high pressure pipe 50 mm in diameter and an end cap to suit from the local hardware store. I used the high pressure pipe because of its increased wall thickness for additional strength.

First thing to do is work out the required length of coax from the antenna to the radio, to this add another 6.5 metres which will form the choke.

Cut a piece of the PVC tube approximately 300 mm in length.

Drill two 6 mm holes (A and B) 45 mm from the end of your pipe, opposite one another and another one at right angles (C) approx 50 mm from the end, this is the top of your balun –refer Photo 1.

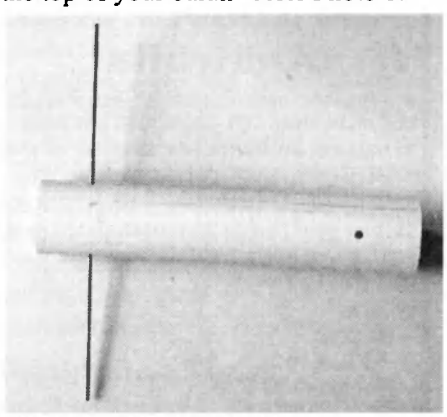


Photo 1: PVC drilled, with a piece of rod through holes A + B for clarity.

Drill the last hole 200 mm towards the bottom (D).

Drill a 6 mm hole in the top of the end cap.

Wind about 40 turns of RG-58 onto the former (pipe) starting from hole (C); leave enough tail through the top to connect the dipoles too, tightly wind down the pipe and feed the rest of the coax through hole (D). Refer Photo 2.

Prepare the coax end, put dipoles through holes A and B, tying them off with a knot inside the pipe. Solder one dipole to the centre of the coax and the other to the coax shield. Refer Photo 3.

Seal the end of the coax with butyl rubber tape, sometimes called self amalgamating tape.

Double check all the connections and test coax for shorts using a multimeter. There should be continuity between one dipole leg and the centre of the coax and continuity between the other dipole leg and the shield. Make sure there are no shorts between the inner and outer of the coax. Refer Photo 4.

Assuming all is well, put a 38 mm eye bolt in the hole already drilled in our end cap, firmly securing with a Nyloc nut – Refer Photo 5.

This now becomes the top of our balun and when everything is again double checked can be glued to the top of the balun using PVC cement.



Photo 2: Coax wound onto the former.

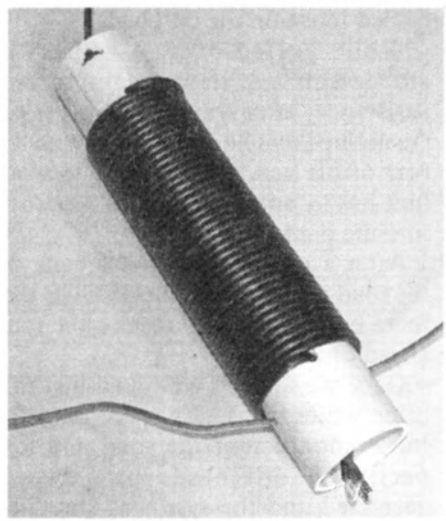


Photo 4: Completed balun without top cap.

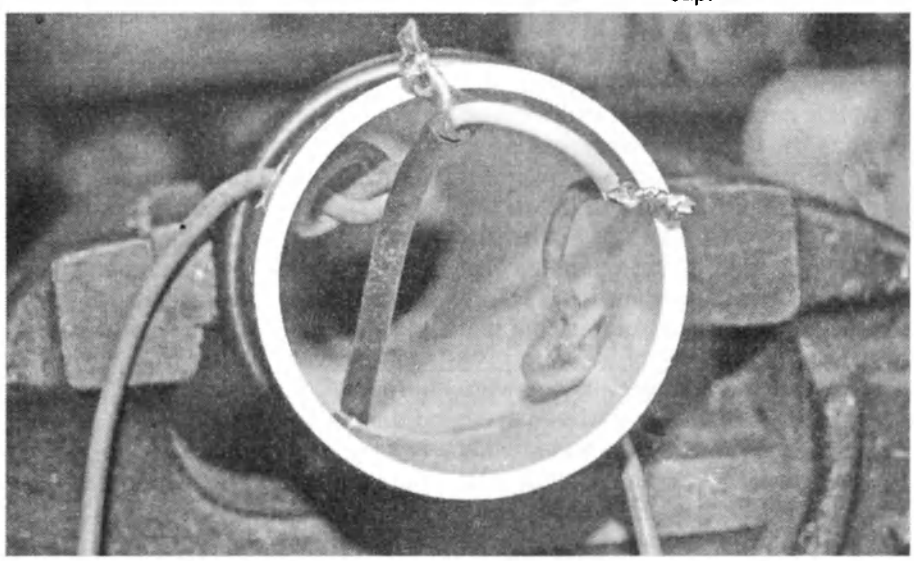


Photo 3: Top of former showing connection to dipoles.

The eyebolt is used as an anchoring point for your lanyard to pull the antenna into the air. Refer Photo 6.

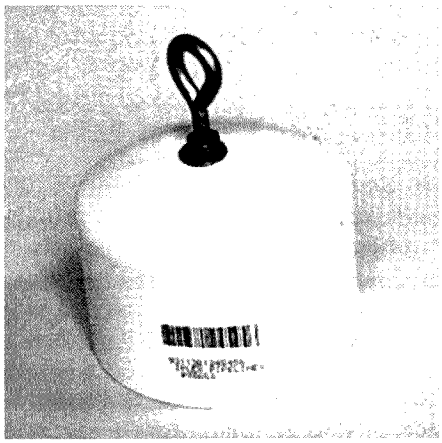


Photo 5: Close up of end cap.

As can be seen it is not very hard to build a complete half wave dipole/ inverted vee with balun from odds and ends found in and around the shack. The complete antenna will cost around forty dollars if purchasing everything new from the local hardware store. This is a considerable saving over a commercial antenna, plus you have the satisfaction of building it yourself.

This could possibly be a good construction night activity for Foundation Licensees at your local radio club.

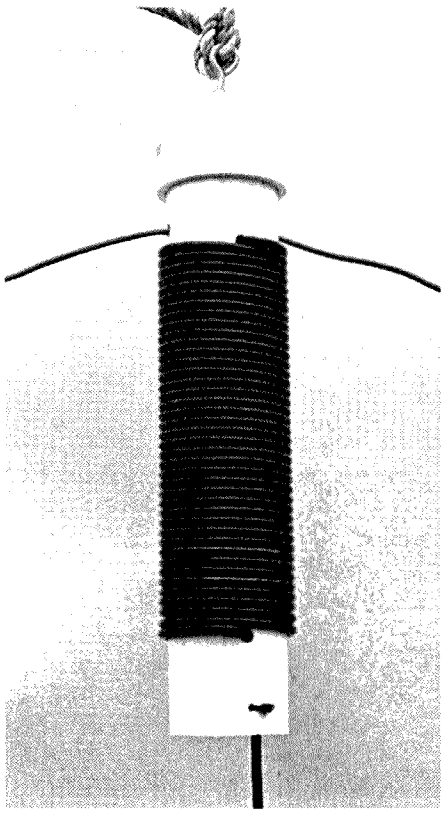


Photo 6: Completed balun up in the air.

Parts required

- 300 mm length of PVC 50 mm high pressure pipe (Bunnings)
- One end cap to suit (Bunnings)
- One small can PVC pipe cement (Bunnings)
- One 38 mm eye bolt (Bunnings)
- Nyloc nuts to suit eye bolt (Bunnings)
- Length of RG-58 coax to suit (Jaycar)
- Connector to suit radio (Jaycar)
- Solder and cable ties (Jaycar)
- One roll of self amalgamating tape (Jaycar NM-2826 or equivalent)

Further Information

A couple of good internet sites with various methods of building a choke balun are:
http://www.qsl.net/taldx/amator/broadband_baluns.htm
http://www.hamuniverse.com/balun.html

Contributions

Do not forget, if you have something suitable to publish, feel free to submit it direct to the Editor or to me, and I can collate the material for inclusion in the column. That is it for this month; have fun building the choke balun.

Foundation Corner Two Correction dipole antenna length

A number of correspondents have pointed out that the formula included in the Foundation Corner article on half wave dipoles actually gives the length for a full wavelength at the frequency of interest.

Of course, this length needs to be halved to give the half wave length, so for the 40 m band, the correct lengths are 20.07 meters overall end to end and 10.035 meters approximately for each leg.

Andrew Davis VK1DA also notes the following:

The reference to a 40 m dipole being used "as a 5/8 wavelength on 15 m" is misleading. On 15 m, a 40 m dipole is being used as three half waves, fed in the centre of the centre half wave. Each side is .75 wavelengths on 15 m, not 5/8 which would be 0.625. The 5/8 on 15 m is 8.84 m whereas each side of the 40 m half wave dipole is 10.56 (less end effect in both cases).

Our apologies for missing these errors during proof reading and review of the material. Peter VK3PF Editor. **ar**

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Equipment Review:
Icom IC-7600
HF – 6 m all mode transceiver

Bill Roper VK3BR and Ron Fisher VK3OM

At first glance, the IC-7600 HF – 6 m transceiver would appear to be an upgrade from Icom's very successful IC-756 series, but with a newer look. However, do not underestimate this rig. It has many extra features and improvements from the last of the IC-756 series, the IC-756 Pro III, and owes many of its new features to the IC-7700 rather than being a further development of the IC-756 Pro III.

The IC-7600 is similar in size and weight to the IC-756 Pro III. Its dimensions are 340 mm wide by 116 mm high and 279.3 mm deep, and mass is 10 kg. Like the Pro III, the IC-7600 runs 100 watts output on HF and 50 MHz, has a built-in ATU, features a colourful TFT screen dominating the front panel, and does not have an in-built power supply.

However, amongst a number of new features, the IC-7600 has three 'roofing' filters at the first IF, a faster speed DSP (separate DSP units for the receiver/transmitter and for the spectrum scope), and an improved DSP Noise Blanker (the NB in the IC-756 Pro III was analogue).

As with the earlier IC-756 series, the IC-7600 specifications state a requirement for an external 13.8 volt, 25 amp power supply. However, during our tests, which used several different power supplies, it seems that, although the specifications indicate the rig requires 23 amps maximum on transmit, it worked quite comfortably on a standard 20 amp PSU on SSB.

If you intend to use an older PSU, rather than a new Icom PSU, with the IC-7600, beware of the need to have one of the new standard DC four pin connectors! Hopefully, these new style power connectors can be obtained from Icom and their dealers.

Those who have used any of the IC-756 Pro series transceivers will immediately feel comfortable with the IC-7600. The front-panel layout is quite similar to that of the IC-756 Pro III, with the exception that the slightly larger TFT display now takes up some of the space previously used by the analogue meter (which now, in digital form, is incorporated in the TFT screen).

The IC-7600 is of robust construction with a solid die-cast chassis and well-ventilated back panel. The sheet-steel case is finished in a fine black finish and is fitted with a handle on the left side. The front panel has a smooth, black matte surface and all controls are very clearly labelled. The front feet under the case are solid and can be flipped up to enable the IC-7600 to be angled upward for better viewing of the front panel screen and controls.

What can the IC-7600 do?

At first glance of the owner's manual, and the transceiver in action, it seems that the IC-7600 will do just about anything a radio amateur is looking for in a top-notch HF – 6 m transceiver. For example, the IC-7600 includes a dual watch facility (which enables reception on two frequencies within the same amateur band), a very useful facility indeed for the keen DXer and contester, and one which was, strangely, not offered with the higher specification IC-7700.

This rig has so many features that it is not feasible for us to comment in detail on each one. However, here are some of the more important features.

The first thing that strikes you about the IC-7600 is the colourful and clear display which dominates the front panel. This screen size has increased from that used in the IC-756 Pro III to 14.73 cm diagonal and now has a resolution of



Photo 1 - The IC-7600 HF - 6 m all mode transceiver

400 by 240 pixels. The most important thing about the screen that the reviewers noticed was that, unlike the Pro III screen, this one is at full brightness immediately after switch-on. However, it was slightly 'grainy' when compared to the screen on the IC-7700.

The main tuning knob has a knurled Neoprene ring, is heavily weighted and turns very smoothly without any side-play, and has adjustable tension. The tuning rate steps can be easily adjusted in multiple settings from 25 kHz to as low as 1 Hertz.

Another interesting feature is the digital metering which is now included in the TFT screen rather than being a separate analogue meter. It can be switched to resemble a standard analogue meter, an edgewise meter or a bar graph. In the transmit mode the metering can indicate either RF power out in percentage, SWR, ALC level, speech compression level, drain current of the final amplifier MOSFETs, voltage on the final amplifier MOSFETs, and the PA compartment temperature. The IC-7600 metering can also be switched to display all transmit parameters simultaneously in a bar graph presentation.

For radio amateurs not used to the current state of digital meters, when using the IC-7600 metering system in the simulated analogue mode, at first glance it is hard to accept that you are not watching an analogue meter.

Unlike the IC-756 Pro III, which employs a triple conversion receiver, the IC-7600 uses a double-conversion superheterodyne system, with IFs at 66.455 MHz and 36 kHz. Although more difficult to implement, this double conversion system is intended to considerably reduce signal distortion. Suffice to say, received signal quality on the IC-7600 is outstanding.

A high stability master oscillator is used which makes for a very frequency accurate and stable transceiver.

As with all other Icom DSP transceivers, the IC-7600 offers fully configurable receiver IF selectivity filters for all modes of operation. Three default filter selections are available for each mode, with continuously variable bandwidth available via the Filter Menu. In addition, there are selectable Sharp and Soft shape factors available for SSB and CW.

The IC-7600 is fitted with 15, 6 and 3 kHz roofing filters at the 64.455 MHz first IF. The Filter Menu allows any one of the three roofing filters to be used with each of the three IF filter selections.

The DSP-based twin Pass-Band-Tuning controls operate in exactly the same manner as on the IC-756 Pro series and are very effective in reducing signal and noise interference to the received signal. Numerical and diagrammatic bandwidth displays on the TFT screen facilitate use of this feature.

Icom have provided new features in the IC-7600 for the CW enthusiast. The APF/TPF button selects the Audio Peak Filter (APF) in CW mode, and the Twin Peak Filter (TPF) in RTTY mode. The APF offers Sharp and Soft shape factors, and three bandwidth selections, WIDE, MID or NAR BW by pressing and holding the button.

The spectrum scope on the IC-7600 has been upgraded in several aspects from the IC-756 Pro III. The scope span has been increased to +/- 250 kHz, which is the same as the IC-7700 and the IC-7800, and the minimum bandwidth has been decreased to 100 Hz, again in line with the IC-7600 and the IC-7800. Also, the scope's speed is now adjustable.

Incidentally, having used the spectrum scope feature on several Icom review rigs in recent times, the reviewers always find it difficult to go back to a transceiver which does not have this facility.

The tuneable manual notch filter, which is inside the AGC loop, is extremely effective with a stop band attenuation of at least 70 dB. Whereas the notch width was fixed in the IC-756 Pro III, the manual notch filter in the IC-7600 has three width settings. This manual notch filter suppresses an interfering heterodyne before it activates the AGC.

The auto notch filter comes into play after the AGC, and suppresses single and multiple tones. However, strong undesired signals can still cause AGC action. The manual notch filter and the auto notch filter are mutually exclusive and the auto notch filter is inoperative in the CW mode.

The DSP noise reduction facility works as well as that in the IC-756 Pro III, and is very effective. As expected, when the noise reduction level is increased, there is a slight loss of high frequencies in the received audio.

The IF-level DSP-based noise blanker is a strong feature of the IC-7600. It is extremely effective in suppressing fast-rising impulse noise spikes before they stimulate AGC action, many of which would otherwise cause AGC clamping. The noise blanker threshold, depth and width are adjustable, and it works rather well in conjunction with the noise reduction facility. Strong adjacent

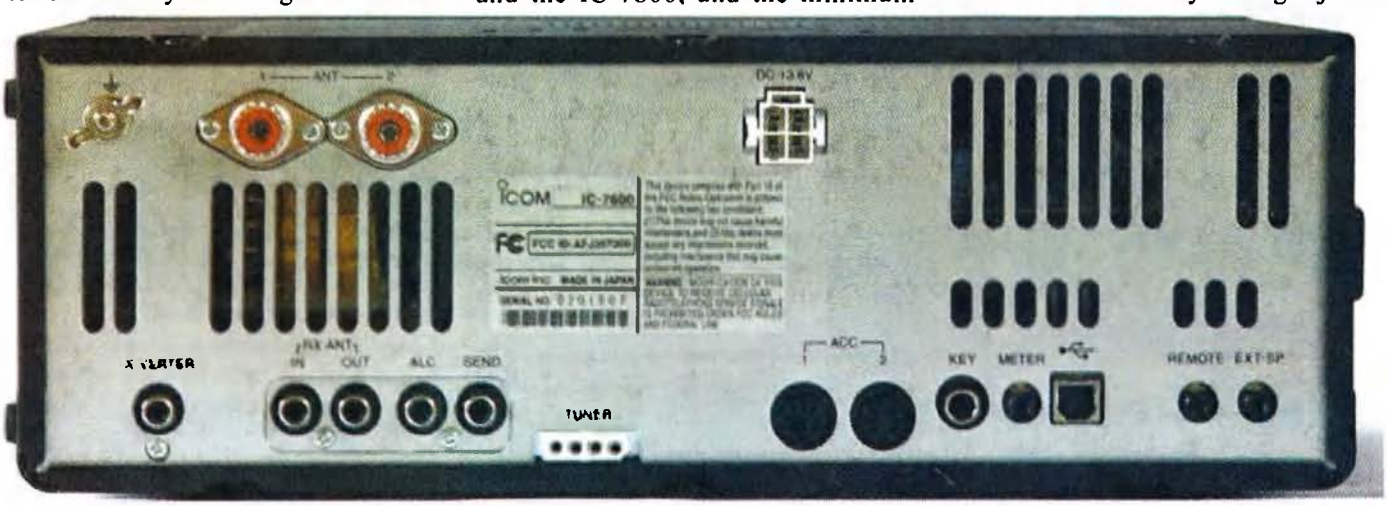


Photo 2 - IC-7600 back panel

signals can still create modulated distortions in the receiver, so only use of the minimum level of noise blanking is needed to reduce the noise impulses to a satisfactory level.

The IC-7600 has dual AGC loops with Slow, Mid and Fast settings which can be menu adjusted for optimum effect. Press and hold the AGC button on the left hand edge of the TFT screen for one second, and the AGC decay timing menu pops up on the screen, enabling setting of the timing range on each of the Fast, Mid and Slow positions of AGC. Each mode of operation has settings specifically for that mode.

In practice, the AGC is very smooth in operation and does not seem easily susceptible to strong signal overload. The stated third order intercept point for the IC-7600 is +30 dBm, with a dynamic range of 104 dB, which is an excellent result for a mid-range HF transceiver. However, it should be noted that the third order intercept point remains the same as the IC-756 Pro III, which is 10 dBm down on that achieved with the IC-7700 and the IC-7800.

.....the IC-7600 includes a dual watch facility (which enables reception on two frequencies within the same amateur band), a very useful facility indeed for the keen DXer and contester.....

The IC-7600 has two USB ports. The USB port on the front panel can be used to connect a USB memory stick for reading/storing a wide variety of the transceiver's information and data, and inputting updated firmware, as well as connecting a USB keyboard for RTTY and PSK operations. The USB connector on the rear panel of the IC-7600 is used to connect the transceiver to a PC (personal computer). This is the only connection required between the IC-7600 and the PC – no interface is required. Download the Icom USB driver from the Icom website and you can be on the air with computer control of the IC-7600.

Note, however, that, unlike the IC-7700, the IC-7600 does not have a video output connector to enable use of an external monitor.

The IC-7600 has a built-in receive and transmit audio equaliser which has separate bass and treble adjustments for a total of 121 combinations. This enables you to adjust the tonal quality of your transmitted voice signal as well as the receiver audio. In addition, on transmit the bandwidth is selectable from 100, 200, 300, and 500 Hz at the low-pass edge, and 2500, 2700, 2800, and 2900 Hz at the high-pass edge, respectively. Three types of high and low combinations can be stored in the memory as favourite settings. With this flexibility, the transmitted audio quality is adjustable to your preference.

On transmit a DSP based speech compressor is available which increases average RF output power up to 20 dB of compression, although the reviewers found that about 5 dB of compression was sufficient.

For the CW enthusiast, a straight key or external keyer can be connected to a ¼ inch (6.35 mm) jack on the back panel, or a keying paddle can be connected to a ¼ inch jack on the front panel to use the inbuilt keyer. Full and semi break-in is available with a front panel adjustment for delay.

With use of the twin PBT (pass band tuning) controls, you can narrow the receive filters for CW down to 50 Hz with an excellent shape factor and steep skirts, and no suggestion of ringing. This is where DSP filtering scores in comparison with standard IF filters.

The IC-7600 has a total of 101 tuneable memories including two scan edge memory channels which are used for setting edges for programmed scans.

The remaining 99 memories, which can hold one frequency and one mode in each channel, are tuneable and can be transferred to the VFO. In addition, each band has three stacking registers which store all operating parameters selected for that frequency.

As with the IC-756 Pro III, the IC-7600 incorporates a digital voice recorder which provides 90 seconds of recording from four memories for transmit messages. On receive a button push enables the last 30 seconds of received audio to be stored in each of an additional 20 memories for playback, a total of 200 seconds!

Another interesting feature of the IC-7600 is the Auto Tune system which tunes the displayed frequency automatically when an off-frequency signal is received within the range of ±500 Hz on CW or ±5 kHz on AM. The IC-7600 also has an automatic frequency control for use with PSK. If a PSK signal is received within the AFC tuning range (default is 15 Hz) the decoder automatically tunes into the signal.

Also, the IC-7600 enables stand-alone PSK and RTTY operation (no need to connect a PC). The received signal decodes on the TFT screen, the outgoing message can be sent from a keyboard plugged into the USB port, and a built-in 'waterfall' display and vector tune indicators help to tune in the signals. There are also transmit memories for messages than can be sent at the touch of a key.

Incidentally, CW operators are catered for very well with the IC-7600. Quite apart from sharp DSP filtering, and the Audio Peak Filter, the IC-7600 incorporates full QSK operation and a smooth electronic keyer.

There are three antenna connections on the rear panel of the IC-7600, two for transceive operation and one for receive only. These antenna connections are manually selectable from the front panel, but can also be locked into the band memories. In addition, there is a connection for an external transverter.

The IC-7600 has an inbuilt, fast acting automatic antenna tuning unit which matches antennas ranging from 16.7 to 150 ohms unbalanced to the transceiver required 50 ohms. On 50 MHz the ATU matches from 20 to 125 ohms. In other words, the ATU will match a VSWR of up to 3:1; on 50 MHz it will match a VSWR of up to 2.5:1.

On the air

The review transceiver was put on the air from both reviewers' radio shacks. In a nutshell, both reviewers were very impressed with this rig except for, initially, the SSB transmit audio quality. The only microphone available was the supplied HM-36 handheld unit. When using the transceiver's default settings, the transmitted audio seemed lacking in high frequency response and produced muffled audio.

However, after playing with the transmitted bandwidth settings (on the low frequency end you can set the cut-

off at either 100, 200, 300 or 500 Hz; and at the high end you can select the cut-off to be either 2500, 2700, 2800 or 2900 Hz) and the shaping of the transmit audio response with the microphone DSP equaliser, the end result was quite acceptable.

We would have liked to be able to try the IC-7600 with one of Icom's quality desk microphones, the SM-20 or the SM-50. We are sure that this would have considerably improved the 7600's transmit audio quality over the best achieved with the HM-36 handheld microphone.

Although there are just under 70 controls on the front panel of the IC-7600, and many of the functions, particularly the setting up of operating parameters, are menu driven, nevertheless the reviewers found operation of the transceiver was quite intuitive compared to some other transceivers we have reviewed in recent years. If you have used any of the modern era Icom transceivers, you will feel quite at home with the IC-7600.

Of course, most of the settings available on the IC-7600 are 'set and forget', so in actual on-air operation of the transceiver, only a small handful of the available controls will be in regular use.

On receive the IC-7600's performance was most impressive. The quality of the recovered audio on SSB was very good, even when using the inbuilt speaker pointing upwards in the top of the transceiver's case. A good quality external speaker improved the received audio quality even further. AM reception was excellent although we found that the AM broadcast stations sounded better in the 6 kHz bandwidth setting than in the 10 kHz setting.

It was also noted that the IC-7600 ran much cooler in operation than the IC-756 Pro III, even after a prolonged period of transmitting.

Incidentally, the 173 page instruction book that comes with the transceiver is quite comprehensive and covers everything that a user needs to know about using the equipment. A quick scan of this manual would be very desirable before firing up the IC-7600.

Conclusions

Both reviewers were extremely reluctant to part with the IC-7600. Quite apart from the usual excellent facilities one expects from a transceiver of this quality, the features that stand out in the minds of the reviewers include the outstanding receive audio quality, the effectiveness of the DSP noise reduction, and the usefulness of the spectrum scope.

Although it is a complex example of modern, leading edge communication technology, the IC-7600 is a very easy transceiver to use, and provides an incredible number of adjustments to enable the operator to 'personalise' just about every aspect of receiving and transmitting.

This rig is an excellent example of Icom's dedication to continual improvement in amateur radio equipment, and is a very worthy successor to the IC-756 Pro III.

By shopping around, you should be able to purchase a new IC-7600 from around $5000 to $5500.

Our thanks to Icom Australia in Melbourne and, in particular, Kitty Mau for making the IC-7600 available for review.

Photos by Bill Roper VK3BR

ar

TET-EMTRON

Antenna Manufacturers

New Tet-Emtron Vertical Range

- All Aluminium with Stainless steel hardware.
- No adjustment needed to main antenna.
- Light.
- Free standing—no intrusive guy wires.
- 1 kW PEP power rating.
- Can be ground mounted or elevated.

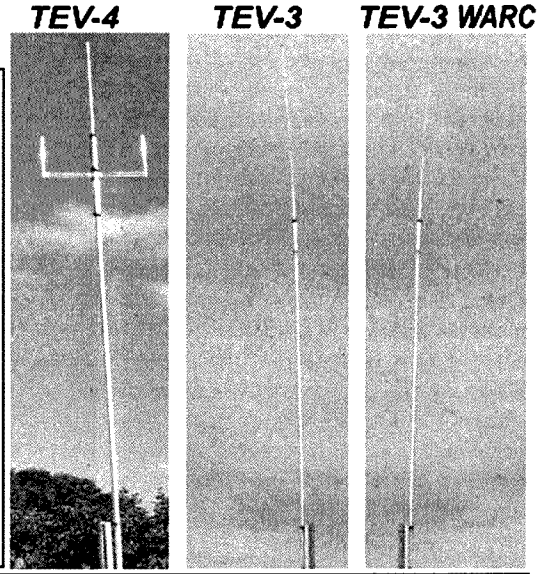
The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang from the elevated antenna. The antenna comes with a set of radials that has a resonant radial for each band. Further sets can be ordered from TET-Emtron if desired.

See the web site for more info and a complete dealer list.

New

Tet-Emtron Vertical Range

TEV-4 TEV-3 TEV-3 WARC



Antenna	TEV-4	TEV-3	TEV-3 WARC
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

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STRATFORD
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ABN: 87404541761

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Email: rawmar@hotkey.net.au

Stationmaster for 40 metres

Paul Whitrow VK5FUZZ

Hello there from VK5FUZZ. My name is Paul and I am located in amongst the beautiful vineyards at McLaren Vale, over-looking the Spencer Gulf.

I have had my F call since October 2007, and at the time I was working which enabled me to buy my radios and set up a G5RV at my QTH.

I enjoy working 40 metres and found it quite challenging to make a contact with an overseas station on 10 watts. The trouble I was having was that overseas stations were working long path and my signal was way down in their noise level. So I listened to the operators here in Australia going back to them, and noted that most of them were working with vertical antennas.

Well this started me looking around for a suitable antenna, but I was put back a bit when I saw the price of some of these antennas, ranging as they did from $400 upwards.

I had retired from my place of employment by now and just could not afford anything like that, so I browsed eBay and saw a new 80/40 metre converted Stationmaster advertised for $169.

I discussed this with a few people and even spoke to the manufacturer, and was convinced this was the way to go. I paid for it on the Thursday and had it at my front door on the following Monday.

Tuesday I started building the antenna, putting it all together after reading the instructions carefully. All the pieces of tubing slid in nicely and all were screwed down; then I checked the length out at 5.23 metres (17ft 2 inches) which I have always known to be the length of a Stationmaster, and slid the tip down to that length.

I did not really want the 80 metre side of it so I got my faithful soldering iron out and removed the tap on the copper coil then counted up 20 rings and re soldered the tap back on the copper coil. I then had to make up a RF choke. This was done with a piece of 90 mm PVC, with ten turns of RG58U on it wound tightly together and held with a couple of plastic cable ties.

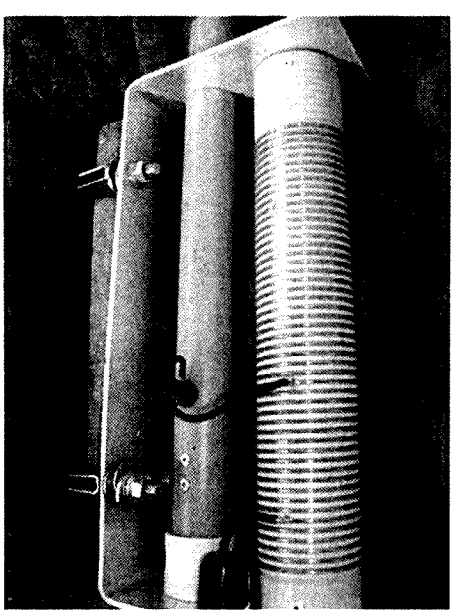


Photo 1: The Stationmaster loading coil, showing the new 40 metre tap. If you look closely you can see the original 80 metre tap.

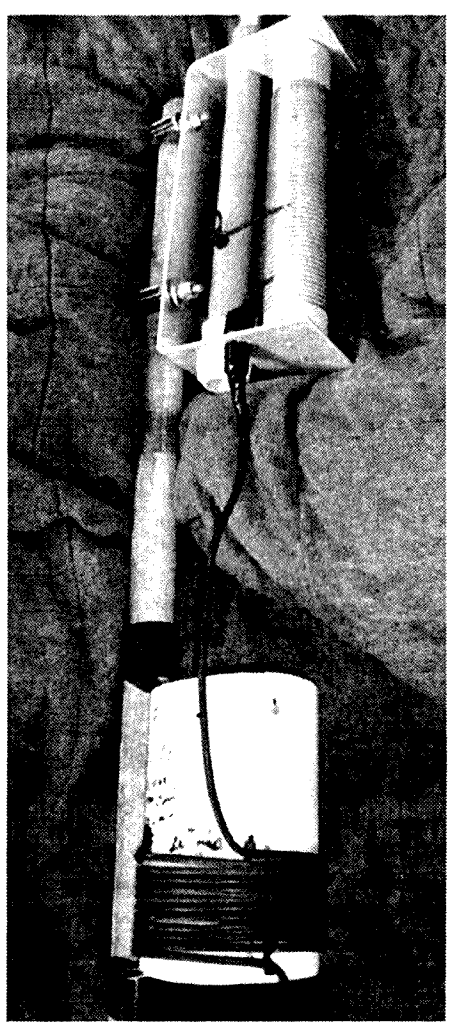


Photo 2: The RF choke, ten turns of RG58U on a piece of 90 mm PVC pipe.

I then found a pole for it and connected the antenna using a couple of 'U' brackets. Now it was time to connect the RF choke to the antenna and I used a joiner to connect the coax (RG213) to the RF choke. I originally tied off the pole to the facia board of the house but got a bad SWR reading because it was reflecting off the roof of the house, so I stuck the pole in a hole in my back yard and the SWR came right down to 1.3.

I have a 14 metre (46 ft) tower herewhich I have been waiting to put up and this antenna is going up on that with two other verticals. I have to use towers as I have a very small back yard.

At the moment my converted Stationmaster has no radials but it is working fine without them, as I have had contacts to NZ and the USA, among others. Once I put it on the tower the guy wires will act as radials for it.

I want to thank John W2VP and Dean VK5LB for their advice and Peter VK3FLVS, the manufacturer, for all his help. **ar**

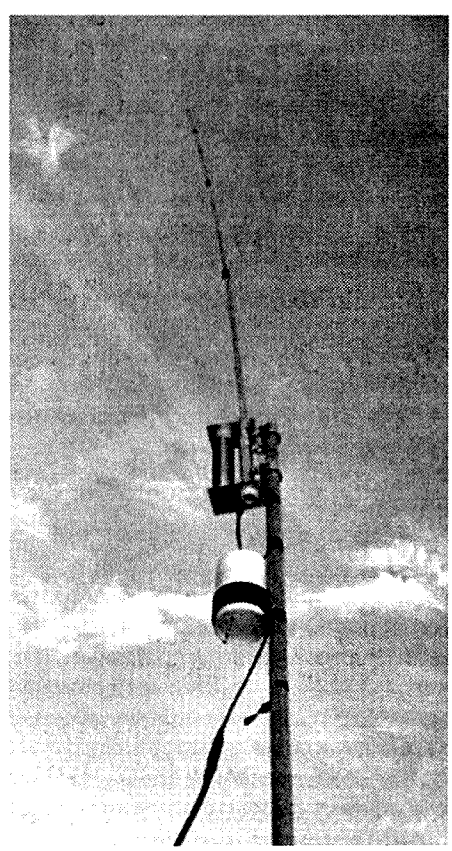


Photo 3: The Stationmaster, converted for 40 metre operation, 'in the air'.



The WIA 100 Committee Call for Articles

In the October issue of AR, acknowledgement was made to a number of amateurs responding to our "Call for historical articles". Since then some additional material has come to hand.

This month, the Committee wishes to acknowledge receipt of the following:

From Robert VK3ZU, Copies of Experimental Wireless from 1926 – 1930. This magazine started out as the official organ of the RSGB.

From Marilyn VK3DMS, an original condolence telegram sent to the family of the late Sir William Slingo, a leading Wireless and Telegraph Engineer (and a relative of Marilyn), by his friend - Marconi in 1935.

Richard VK7RO has forwarded a significant number of references to magazine articles, newspapers etc. about activities in Tasmania from the earliest days. This information adds greatly to our information on amateur and commercial radio in Tasmania.

Rob VK5RG has forwarded an article about the activities of Radio Inspectors over the years, with particular reference to the Amateur Service.

Thank you to all of the above, but we need more! Please help us to preserve the history of our great hobby by writing something about your club, outstanding member or significant event.

The committee also welcomes articles on the future of amateur radio: the changes foreseen and even predictions for our future. Many new modes are being adopted by the more progressive amateur, how are these going to set the stage for the future amateur?

Errata

VK4 October AR

On page 28 of the October edition of *AR*, the TREC (Tablelands Radio and Electronics Club) managed to get its logo superimposed over the TRG (Tablelands Radio Group) photo taken at the Cooktown Lighthouse Weekend.

In the VK4 column on page 20 and under the TRG input, TREC was mentioned as trying out various antennas instead of TRG.

Please be advised that TREC and TRG, whilst both loosely based on the Atherton Tablelands, are quite different groups with quite different agendas - other than an obvious interest in amateur radio.

Ross Anderson VK4AQ

Foundation Two October

It has been brought to my attention that the calculations for a 1/2 wave dipole on page 10 of October's article are in fact for a full The correct lengths are 20.07 meters overall end to end and 10.035 metre on each leg.

Regards, Ross VK3CE

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JARL Ham Fair is a top event

Jim Linton VK3PC

The 33rd Ham Fair organised by the Japan Amateur Radio League (JARL) and held in Tokyo attracted 31,000 visitors and every one of them seemed to have smiles on their faces.



The JARL Ham Fair 2009.

Before the official opening speeches, musical fanfare, photo call, VIP recognition and ribbon cutting there were radio amateurs lined up and interested on-lookers to the formal proceedings.

JARL President Shoza Hara JA1AN then led the way to the Ham Fair's well-equipped special club station 8J1A, put out a CQ call and logged the first contact.



First contact made by Shoza Hara JA1AN).

The demand to operate 8J1A was extremely high and 30 minute roster spots were quickly filled by eager radio amateurs including a number from overseas.

Speaking later at the Eyeball QSO Party in the New Tokyo restaurant, Shoza JA1AN said he was very happy to see many young people attending the event, reflecting the JARL policy of encouraging more youth to take up ham radio.

Joshiaki Takeuchi, Director of Land Mobile Communications Division, Radio Department, Telecommunications Bureau said he felt an enormous enthusiasm for amateur radio and that the government was providing support for it.

Mr Takeuchi said among the changes made earlier this year was an expansion of the 80 metre band available to Japanese radio amateurs and release of the new low frequency secondary allocation of 135.7 to 137.8 kHz.

Further lifting of restrictions and clarification on the linking of amateur radio to the internet, and further assistance with EchoLink and other Voice over Internet Protocol applications, will be reflected in the band plans.

Electronic licence applications are encouraged to not only make that process more efficient but reduce the cost of licences by 30%.

The JARL Ham Fair, one of the world's top such events, was held on 22 and 23 August at the Tokyo Big Sight, a purpose-built convention centre.

It is difficult to make comparisons, but the *Dayton Hamvention* in the USA that began in 1952 has been the world's biggest for many years, and in Europe, the 34th *Ham Radio* in Friedrichshafen Germany attracted around 17,400 visitors.

Immediately noticeable at the Ham Fair was the more than 160 club booths, exhibiting their history, information on activities and membership recruiting.

There seemed to be a club for every type of activity:

2 metre SSB DX

6 metre CW

The Japan Amateur Radio Teleprinter Society

Far East 'DXPloiters'

29 MHz FM Pacific Repeater Network

JARL QRP club

Fists East Asia

A1 Club

Japan Ladies Radio Society

JAMSAT (amateur satellites)

Yokohama Amateur Microwave Association

South East Asia Net SEANET

Among the others were those concerned with RTTY, award

hunting, antique radio, laser light communications and shortwave listening groups.

The manufacturers had mostly walk-through booths exhibiting their wares and a continuous running video display. ICOM launched its IC-9100 transceiver which drew a lot of attention. It delivers 100 W for HF and 6 metres with an inbuilt ATU, 50 W on 2 metres and 70 cm, plus both D-STAR and 23 cm options.

Vertex Standard (Yaesu), Kenwood which was strong on APRS that is gaining popularity in Japan and displaying its concept HF transceiver due to release in 2010, Alinco, Comet, Tokyo Hy-Power, Diamond – they were all there.

CQ publishing, manufacturers of various Morse code keys and paddles, kit providers, and a trash 'n treasure area with plenty on offer all attracted plenty of interest.

Kit building appeared to have quite a following in Japan and a special area was set up to allow anyone to have a go, with quite a few father and son teams among the solder smoke.

The DXCC desk was busy, with the ARRL Membership and Volunteer Programs Manager, Dave Patton NN1N among those checking cards.

He reported there were 265 applications for the DXCC involving more than 3,000 cards being checked on the two days. News that DXCC accreditation of 7O1YGF Yemen had been approved spread quickly resulting in that card being presented.

The DXpedition by German radio amateurs in April 2000 made 35,000 contacts in almost ten days before being cut short by Yemeni authorities. Doubts that existed since about the authorisation of activity were only recently resolved.

William Leijenaar PE1RAH demonstrated his 435/145 MHz linear transponder that is designed to fit in a CubeSat. Various presentations were made including the technicalities and band planning for the new low frequency allocation of 135 kHz.

On display was a home-brew LF valve transmitter featuring a 6AG7 crystal oscillator and an 807 amplifier, plus photos of the antenna loading system.

This was an excellent event and social gathering of radio amateurs, including those in Tokyo for the JARL hosted 5th Global Amateur Radio Emergency Conference (GAREC).

More photos appear on the inside back cover of this edition of *Amateur Radio* magazine.

*The author Jim Linton VK3PC was a special guest of the JARL at the Ham Fair in Tokyo – the JARL was the host radio society for GAREC 2009, also held in Tokyo.

ar



At Right: One of the new breed of hams, Naomi JF1XKT, aged eight years and licensed for 12 months is the youngest member of the Japan Ladies Radio Society.



Dave Patton NN1N, front right, DXCC card checking.



The 135 kHz transmitter proudly shown by Yoshio Arisaka JA1HQG at the Ham Fair.

News from

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

Mention was made last month that operation was planned from **Mt. Kosciusko** for the **Summer VHF/UHF Field Day** in mid January. Dave VK2JDH has sent in details of the planned operation.

"As part of the 100 year anniversary of the WIA in 2010, ARNSW is supporting a number of amateur radio events For this particular event ARNSW is sponsoring the operation and signing the National Parks consent documents and providing a copy of their Public Liability policy.

Dave VK2JDD, Col VK2KCM and Dave VK2JDH are planning to operate from the summit of Mount Kosciusko in the 2010 Summer VHF/UHF Field Day. National Parks are also assisting by providing fee-free consent and logistical support for the operation.

As it is an Alpine Region National Park, there are restrictions on what we can do. Such as no generators, camping locations and transport to the site. The weather during this time of year is still highly variable and can range from mid to high 20 degrees to very windy and below 0.

Power to run the radios at high power is one of the biggest issues. We are currently doing a power budget says Dave VK2JDH and it looks like we will have to supplement the batteries with solar panels to be on air for 18 hours.

They will be operating on 6 m, 2 m, 70 cm and 23 cm. They are hoping to have 10 GHz if they can borrow a station.

Over the weekend NP expects that there will be several hundred people who will make the walk from Charlottes Pass and Thredbo, so we have to ensure that we do not impede access to the summit or spoil others visitors enjoyment". (Mark your calendar 16/17 January 2010 to work the team.)

Also mentioned last month was that the **Radio Expo** will be on in January and I got the date wrong. It should have read Sunday the 24th, not the 17th. Still, a week in Coffs Harbour at that time of year for those who like the holiday format would be most enjoyable. Again mark your calendar to attend the first VK2 field day for the year. Coordinator Gary VK2ZKT advises it will be bigger and better at the same location as in previous years. It is sponsored by the **Mid North Coast Amateur Radio Group.**

While in the summer mood **VK2WI** News will observe the usual break with only a morning transmission on December the 27th and January 3rd and 10th. The first Trash & Treasure at Dural for 2010 is likely to be on Sunday 30 January – a busy month in VK2.

The final scheduled T&T for the year at VK2WI will be at the end of this month, Sunday the 31st November. Perhaps by then there may be access to the 'shed'. During September and into last month the internal fit-out was undertaken.

Mentioned in recent notes was that **Amateur Radio New South Wales** was checking the register of members and contacting those who were unfinancial.

Membership Secretary Norm VK2TOP has advised that there was confusion in the minds of some that ARNSW was not the (former) NSW Division. Some apparently thought that membership of either the National WIA or ARNSW (the NSW Division) provided membership of the other. When the WIA was reorganised, the NSW Division became ARNSW, a State wide club within VK2.

Some of the confusion was that the name – NSW Division – was still being used at intervals. The ARNSW Council has determined to reduce possible confusion by referring to all activities, other than that required for official purposes, as Amateur Radio New South Wales. ARNSW would like amateurs to be members of both bodies. It is particularly important that the National body (WIA) receives the support of as many amateurs as possible.

A big date in the early part of next year will be the **Central Coast Field Day** at Wyong on Sunday the 28th February. On the preceding Saturday evening there will be a dinner co-hosted by ARNSW. Another big date in VK2 will be 11 March, the centenary of that Sydney meeting which created the Wireless Institute.

Some anniversaries of a different kind: It is 40 years since an experimental broadcast was conducted through **VK2WI** at Dural (Sydney) when a live two way interview was conducted with a mobile station driving down Northbourne Avenue, Canberra.

It would be no trouble now with modem technology but in 1969 it was a challenge. To achieve the operation field relay stations were set up at Newnes Junction near Lithgow and on Mt. Ginini west of Canberra. Both then used 'Fred' the Orange repeater to complete the circuit.

During the morning broadcast a two way contact was established with the mobile and several overs conducted. It worked well considering it was all manually switched along the path. It was tried again for the evening broadcast but Murphy took a hand to upset the show.

This time it was a shorter path out to Forbes. Before the broadcast the team at Newnes Junction had been down to the remote transmitters to refuel the generators used for charging the batteries. It was still in the era of valve equipment. There had to be some separation between the transmitters and receivers - all of which were operating on 2 metres in a mixture of both the AM and FM modes.

In the dark someone tripped over the changing cable to a battery and the point of failure was a few seconds into taking the remote signal. The signal just faded out in the VK2WI link receiver and the show was over. It was an interesting exercise.

Another anniversary is in January 2010 when it will be 40 years since the launch of **Australis – Oscar** A which became OSCAR 5 after launch. It was the first amateur radio satellite constructed in Australia by amateur radio members of the University of Melbourne.

They had won the right to produce the satellite against the USA and Germany. It was launched in the USA via a piggy back operation. In Australia arrangements had been made to have telephone circuits to the launch control location, and the proceedings were grafted into a broadcast which originated in Sydney.

Channel 7 at Epping made available an empty studio to anchor the presentation which lasted three hours and was linked out to be transmitted on every available frequency by Sydney amateurs. During quiet times at the launch site, local interviews were conducted and provided program content until something came in from the States.

OSCAR-5 was launched on the 23 January 1970 and was a beacon only, battery-powered system. It was a rectangular package 30 x 43 x 15 cm weighting about 18 kg. It achieved an almost circular orbit at about 1450 km. It had transmitters on 10 metres (29.450) with 250 mW into a half wave dipole.

On 2 metres (144.050) there was 50 mW into a quarter wave rod. It also had a command receiver and rod antenna on 2 metres. It transmitted its HI identification every 52 seconds followed by seven measurements in sequence, being the X, Y and Z axes of its position to the sun. Then followed battery current, voltage and temperature and finally the structure temperature.

It was modulated by a tone centred on 1 kHz which varied +/- to indicate the value of the reading. Its two groups of batteries started at 20 volts and contributed 10 kg of the weight. Internal temperatures were higher than expected which shorten battery life due to increased current consumption.

The 2 metre transmission lasted for about 23 days and 10 kept going for over 40 days. By year's end, over 200 reports had been received from nearly 30 countries.

OSCAR-1 was launched 12 December 1961, OSCAR-2 on 2 June 1962 and OSCAR-3 on 9 March 1965. OSCAR-4 was on 21 December 1965 but the launch vehicle failed to reach orbit. A while back there was renewed Australian amateur interest in OSCARs with the Blue Sat project but I have not seen any recent reports.

73, Tim VK2ZTM. **ar**

Silent Key — Doug Courtney VK2AUC

Doug Courtney's key fell silent on August 22nd 2009. Doug VK2AUC was just short of his 89th birthday.

Born in England Doug migrated with his family when a toddler. He grew up and lived most of his life in the Bomaderry/Nowra area on the south coast of NSW.

Doug saw service with the army in the Middle East and New Guinea during WWII. His training as a signaller no doubt helped when he was attracted to amateur radio in the 1950s. When I met him in 1961, he was already a regular operator on the slow Morse net with sessions on at least one night per week. Doug kept with the net for many years. To me Doug's shack was an example of real 'amateur radio'. His equipment was a mix of converted wartime and home-made units all very neatly set out. Although he did go AM and experimented with NBFM, his great love was CW. Doug spent the last few years working mainly a small group of comrades with QRP CW. Failing health kept him off the air since the beginning of this year.

Doug's wife also passed away after a long illness only a few months ago. He is survived by two of his three daughters and of course grandchildren.

Doug was also a gifted artist and sign writer. He joined the local model flying club, served as president and flew radio control. However his greatest skill was in making miniature static models of ships, 'planes and scenery to great detail. He eschewed regular kits, preferring to use 'bits and pieces' from the scrap bin. One diorama of a desert gun emplacement (from memory?) had one seventy second scale barbed wire!!!

Brian Wilson

HADARC

HADARC Website

Club Repeaters

HADARC operates two linked repeaters, with another under construction.

VK2RNS at Hornsby on 147.250 MHz (+600kHz)
VK2RAT at Berowra on 439.975 MHz (-5 MHz)

HADARC meets at the Mt Colah Community Centre, Pierre Close, Mt Colah, near the Mt Colah Railway Station. Meetings are on the 2nd and 4th Tuesdays of each month from February to November, starting at 8:00pm. The meeting on the 4th Tuesday includes a talk, lecture or demonstration. Subjects have included a member's Electric Car conversion project, Digital Radio & TV Broadcasting, Medical Electronics, Amateur TV and Microwave Communications.

The club runs three nets each week.
All welcome. Listen for **VK2MA**.

Monday	8:00 pm	Club Repeaters
Wednesday	8:00 pm	3608.5 kHz
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PO Box 362, Hornsby NSW 1630
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OTY:

DV in contests

A discussion during a recent EMDRC D-STAR net on the use of digital voice modes in contests leads me to write.

Looking at the rules for several contests shows that where voice modes are allowed, this is usually restricted to AM, SSB and/or FM modulation modes.

With the current arrangement of each contest having its own organiser who controls the rules for that contest, it would seem rather inefficient to start multiple parallel discussions with each contest organiser. Rather, your column is an ideal means to communicate to all contest organisers and the general amateur community at the same time.

I would like to see all contests that are open to contacts made via AM, SSB and/or FM to also allow digital voice modulation contacts to be accepted.

I am deliberately using the generic "digital voice modulation" and not specifically D-STAR digital voice. With the increasing demands on the limited spectrum space available to amateurs, I expect an increasing use of digital modulation modes across all bands as these modes allow for narrower bandwidths, and hence closer channel spacings. This will lead to an increasing number of digital technique technologies to transfer the information about.

I am talking about the uses of digital modulation techniques where voice is encoded. While it is possible to transfer text, pictures and other information digitally, several of the existing digital data modes are already accepted in various contests (although I would like to see these also accept new digital data protocols as they are developed).

I feel that the inclusion of digital voice modulation modes into contests would help boost the interest in these technologies and increase the number of stations that have (home made or commercial) equipment capable of transmitting and receiving them.

I propose that all contest organisers review their rules and expand the range of voice modulation modes to include digital technologies. I would like to see this considered this from the default point of view of 'inclusion' with any subsequent arguments being as to why they are *not* appropriate, rather than the reverse.

Of course I am talking about keeping the same simplex RF contact rules as used in most contests already. (I am aware that there is a new international D-STAR contest, which will have been run for the first time by the time this appears, which allows the use of repeaters. However, even that contest excludes reflectors, dongles and other non-RF contacts).

I propose that all contest organisers review their rules and expand the range of voice modulation modes to include digital technologies.

If the contest allows for multiple contacts within a period of time using multiple modes, then digital voice (either as a single mode or several depending on the technologies used) can be added as another mode to encourage its use to obtain a higher score.

I believe there are few contests (if any) where signal readability is included in the scoring. Digital modulation techniques are "all or nothing" in terms of their reception - either you get a clear voice signal or you get nothing. So, I accept that these contests would need to exclude readability as a factor in the scoring. However, signal strength is still very much a factor that could continue to be used where this is measurable by the receiver.

With broadcast radio and television signals all "going digital" (and for all the same reasons), I can see that digital modulation will become more common in the future (whatever it is or is called) just as AM and FM became more common after their introduction, compared to CW. The older modes will still be used but by opening up contests to the new technologies we can provide encouragement to their wide-spread adoption and development.

I would encourage a wide-spread debate on this topic within the amateur community, with contest organisers responding quickly to the inclusion of the new modulation modes as they are developed. In particular, I would encourage those with D-STAR capable equipment to participate in the EMDRC D-STAR nets, run on Thursday evenings at 2000 EST on port C of all WIA D-STAR repeaters and Reflector 3 port C, to contribute their comments and ideas on this subject.

Again, I would stress that this discussion is about the inclusion of ALL digital voice modulation modes, of which D-STAR Digital Voice is but one example.

Susan Mackay VK3ANZ

OTY: J-pole Sept 2009

Ross, I read with interest your article on the J-pole in September 2009 AR.

Some months ago I built a very similar 2-metre Slim Jim using 300 ohm ribbon. I tuned it for very low SWR at the frequency of interest, using a VK5JST 1-500 MHz Aerial Analyser.

When I then slid the Slim Jim inside a length of 16 mm ID PVC tubing I found that the SWR and tuning had changed considerably. Further experimenting showed that even with the PVC tube beside the Slim Jim the tuning varied with distance from the PVC tube. It was also noted that a 12 mm wide length of very dry quad wooden moulding held near the antenna significantly affected it. I now use the antenna with the PVC tube serving only as an end support and the Slim Jim hanging well clear.

For fine tuning of the antenna I find that a 60 mm length of U-shaped black plastic (as used for hanging posters) can be slid along the 300 ohm ribbon to obtain the best match, and then glued in position.

With regards,

Garth Jenkinson VK3BBK

Greetings Garth,

Thank you for your observations on the J-Pole antenna.

I have not come across this problem, probably as I usually tune the antenna on the broom handle. I note that the correctly tuned point is sometimes different from the calculated point. I have not had the problem of detuning with the PVC pipe cover but this would of course depend on the type and grade of pipe being used.

Your experiences may have answered the reason why the tuning point is sometimes different from the calculated. Again I thank you for your interest in the article.

Regards, Ross VK3CE

VK5

AHARS

John Elliott VK5EMI, President

September was a big month for AHARS: our big Buy and Sell (Hamfest); the Clubs' Convention; and the visit by WIA executives Michael Owen VK3KI and Robert Broomhead VK3DN.

Clubs' Convention

The WIA All Clubs' Convention, organised by Paul Hoffmann VK5PH, went very well, with good attendance, and with many important topics for discussion. The knowledge and guidance of Michael and Robert added greatly to the success of that event. AHARS was well represented at the conference, with some presentations by our representatives.

Annual Buy and Sell

The following day was our annual Buy and Sell event. Guests of Honour were again Michael and Robert.

The opening address by Michael, and the presentations by Charlie VK5KDK and Ben VK5BB on squid poles, followed later by Michael VK5ZEA on his home-brew D-STAR repeater (now in use at Port Lincoln), were well-attended and much appreciated by all who attended.

On the battle front, we had 32 tables selling the usual mixture of old and new to bargain hungry amateurs.

The WIA table did a good trade, selling books from the WIA Book Shop, and signing up a good number of members for our representative body. Thanks also to Trevor VK5ATQ and Peter VK5APR for assisting on the table, their good looks and charming personalities aiding our WIA national representatives significantly, I believe.

Excellent service to attendees was provided by our ALARA ladies manning the ALARA coffee lounge. The President of ALARA, Tina VK5TMC, circulated amongst the buyers and sellers with a tray of food and drink, just like in the old time cinemas. It was a much-appreciated touch, especially by the vendors, who often could not leave their stalls. Outside, the NERC boys put on the usual quality Aussie BBQ, so all possible tastes were attended to.

Next year we intend to run a few workshops at the event. We thank all of those who attended, including those commercial vendors who often come from afar, and at some financial risk. I personally thank the AHARS committee and members who all contributed greatly to this most important event in the VK5 AR scene.

September Meeting Talk

Tony Hughes VK5KAT talked on the designing of high-power transmitting stations, focussing particularly on giant antenna arrays, their construction and the phasing of elements for best coverage.

October Meeting

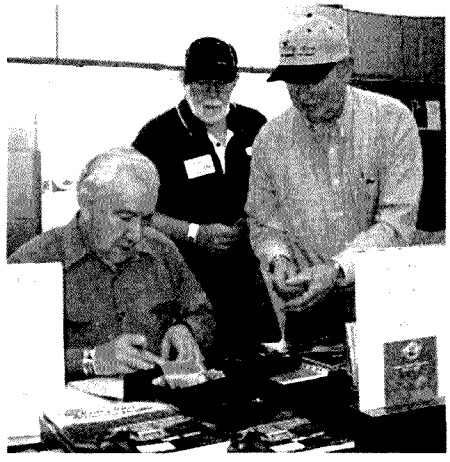
This will already be gone by now, but will have been another club construction night, hosted by our Construction King, Graham VK5ZFZ.

November Meeting

Justin Giles-Clark VK7TW will give a talk on his Optical Communications work.

Our regular contributor, Christine Taylor VK5CTY has been away on a whirlwind tour of northern Europe, her travels involving some major amateur radio events. You will hear about them from the ALARA News.

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Michael Owen, Peter Reichelt, and Trevor Quick made good sales at the WIA table.



(Back row from left): ALARA members Bia Nero-Palladij, Joy Robins, Shirley Tregellas VK5YL, Jean Kopp VK5TSX and Jenny Wardrop VK5ANW, (front row from left), Jenny VK5FJAY, Sharron May ZL3AE, Tina Clogg VK5TMC, Marilyn Syme VK3DMS, Pat VK3OZ and Lesley Smit VK5LOL help out at the Adelaide Hills Amateur Radio Society's buy and sell. The AHARS buy-and-sell is fast becoming a popular destination in Adelaide for those interested in buying radio gear.

HF holiday: working from A35-Tonga

Stephen Warrillow VK3SN

While the South-Pacific is very close to VK land, relatively few Australians have visited the myriad of islands that dot this wide blue expanse.

I had previously spent time in Samoa as part of earlier medical training and enjoyed that experience and subsequent visits immensely. When the time came to escape the chilly VK3 winter for a short break, I considered various options, but settled on Tonga, also known as 'The Friendly Islands'. Refer Photo 1.

It is also referred to as 'the place where time begins', as a sharp kink in the International Date Line places it thirteen hours ahead of GMT, making it the first nation to greet every new day. Tonga is the only Kingdom in the south Pacific and also the only Pacific island nation never to have been externally governed as part of a colonial empire. It is made up of 176 islands, only 36 of which are inhabited.



Photo 1: Tonga – and its position in the south Pacific.

Even on the populated islands, 24 are car free and mains electricity is not at all universally available. Most Tongans live a very traditional Polynesian lifestyle based around subsistence farming and fishing, with a strong emphasis on the importance of culture, family and their local church.

Once the decision to visit Tonga for our family holiday had been made, my mind next turned to the logistics of working HF radio from A35. Initial enquiries about obtaining a Tongan license were not very successful. Searching on the internet led me to contact the Amateur Radio Club of Tonga for advice, but sadly it turns out that the club no longer operates (according to correspondence from its former secretary, Manfred A35MS).

Fortunately, a broader search enabled me to contact Bob ZL1RS, who had worked from A35 recently and was extremely helpful. On Bob's advice, I made contact with the Department of Communications in the Prime Minister's Office and discovered the necessary steps. Using a combination of snail mail and email, I paid the small fee and received my call sign allocation – A35AB. Now it was just a matter of figuring out what to take...

I suspect that most amateurs are familiar with the following balancing act. I was going on a family holiday, not a full-on DXpedition, so there was clearly a limit on what I could reasonably take with me. At the same time, whatever I did take needed to provide decent capabilities (to make the effort worthwhile) and be robust enough to cope with airline baggage handlers as well as tropical weather conditions. Fortunately, modern technology and innovation has greatly helped the modern amateur in these respects and there is a fair bit of gear now available to meet most of these requirements.



Photo 2: The equipment chosen for the visit to A35.

My FT-100D transceiver had not seen much action since I used it while living in the UK in 2002, and has now been superseded, but it remains a very capable 'all-band/all-mode' ultra-compact 100 W transceiver, so it went in to the bag.

What I really wanted to avoid was taking my super-heavy 25 A power supply (all the airlines now seem to take baggage weight limits *very* seriously!). Fortunately, there are plenty of inexpensive, small, lightweight, switch-mode supplies now available and the Manson SPA-8230 looked ideal.

Trying to work multiple HF bands from a single antenna while portable and not using a tuner (too much extra weight and bulk) is potentially a tricky business, but I have used a Bushcomm SWC multi-band dipole for a while at the home QTH and thought it would be a good option for portable work. The antenna is pretty rugged and covers 80 m through to 10 m, achieving a pretty reasonable SWR without the aid of a tuner.

After ordering the kit on-line and assembling the components one night, I coiled the dipole onto an old coax reel along with 25 metres of RG-58 terminated with PL-259s. Finally, I was not sure where I would be setting up, so I packed a long mains extension lead so that I could reach mains power wherever it was available. All up, the kit seemed pretty compact and did not end up blowing the baggage allowance. Refer Photo 2. I also made sure to take electricians tape, poly-cord, spare fuses and a Leatherman multi-tool to deal with basic repairs.

We departed on Friday 26th June at midday, pleased to be leaving cold, grey Melbourne. After a stopover in Auckland we flew north and arrived on the main island of Tongatapu in the early hours of Saturday morning. Getting from the airport to the capital Nuku'alofa was

easy and we were pleased to fall into bed at the hotel.

It was not so easy getting up a few hours later, but the excitement of exploring our new surroundings helped. After breakfast, we wandered in to the national capital and enjoyed an easy walking tour of all the major sites as well as visiting markets and other cultural centres.

We soon settled in to the 'Tongan-time' psyche and adjusted to the fact that there really was no need to hurry anything that day. The following day was Sunday, which in Tonga pretty much means the only activities permitted are church attendance and eating a massive lunch with family.

In essence, the whole nation closes for the day, but we found a full-day tour that would take us to all the important sites on the main island (including spectacular blowholes, ancient chiefly tombs, Cook's landing point and a huge Stonehenge like structure) and found time for a lazy swim in the afternoon. While I had not yet unpacked any of the radio gear, we had had a great time so far.

On Monday morning we had an early start. After packing up, we left our hotel and walked over to the wharf where we located the boat that would take us to 'Atata Island. This small island is home to a little fishing village and also accommodates visitors at a basic resort.

As the island approached, we really began to appreciate the skill of the crew who needed to negotiate narrow channels through the coral reef. We made it safely through to the small jetty and were warmly welcomed by our hosts and shown to our accommodation.

After we had settled in to our small bungalow, I wandered around to check out options for getting the antenna up. There were certainly plenty of coconut palms and other trees about - a few too many, in fact. The dipole was nearly 50 m in total length and there was no way I could find a straight clear run of this distance, even right near the beach. After a while I decided it would be far easier to run the dipole in an inverted-V configuration. This would reduce the amount of space required to set it up as well as allowing me to more easily place the wire over the surrounding lush tropical vegetation.

I tied a heavy shell found on the beach to my poly-cord and after a few attempts, managed to throw it over the tall coconut palm I had selected to support the centre-feed point. My initial attempts caused much amusement amongst several local on-lookers who obligingly retrieved the line on the many occasions when I missed. I unwound the dipole and coax and tied the balun on to the poly-cord prior to hoisting the lot about 10 metres up into the air.

The next, and more difficult part, was getting each limb of the dipole out above surrounding trees to the necessary distance. After a bit of trial and error, the best solution was to repeatedly toss a shell-weighted length of poly-cord over the dense trees using a 'leap-frog' approach, until I had a good run lying over these obstacles.

In the end, while it was not possible to get the antenna perfectly symmetrical, I was satisfied that it looked good enough. Before I could unpack and set up the transceiver though, the rest of my family decided that radio was definitely not the main reason for us being on a tropical coral island.

Out-voted by my family, I agreed that we should really go for a snorkel. This proved to be a good move. Our hosts took us out on their boat to a nearby part of the reef and we spent several hours enjoying the amazing spectacle of untouched coral reef and its abundant marine life. I had to admit, this was a good reason to delay pulling out the rig!

Setting up the radio was straight forward enough and all was going well until I noticed that the hand-microphone lead had been damaged. Somehow during transport, the lead had been almost severed, close to the microphone end. Fortunately, none of the delicate wiring seemed injured and an easy repair was made with electrical tape. Once this was sorted, I checked all the connections and turned on the power and waited anxiously.

The familiar blue glow of the FT-100D display came on and I was relieved. Better still,



Photo 3: The author, Stephen A35AB/ VK3SN, at the microphone.

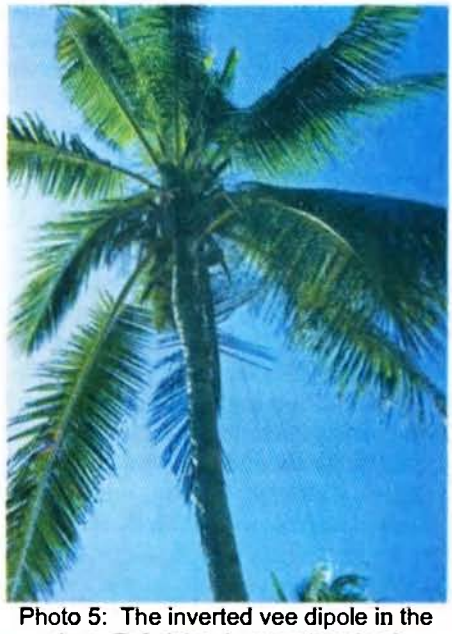


Photo 5: The inverted vee dipole in the air on Fafa Island – very 'low key'.

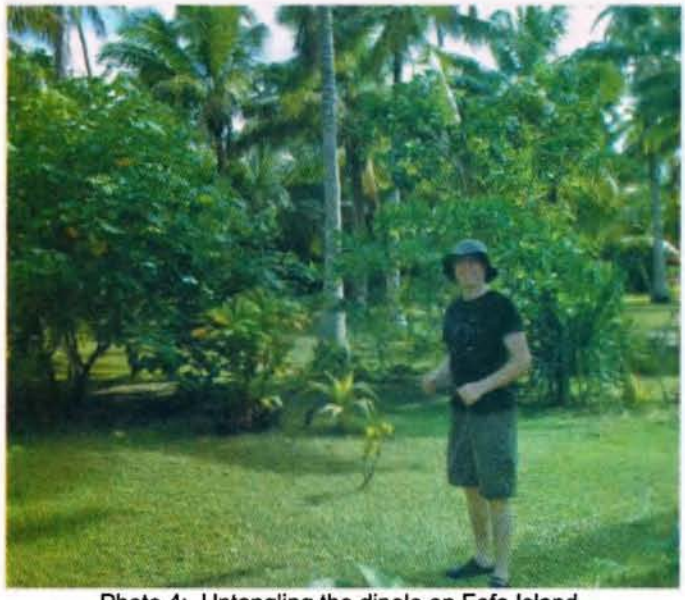


Photo 4: Untangling the dipole on Fafa Island.

the internal SWR meter indicated very acceptable readings on all of the HF bands and the microphone even worked. It was mid-afternoon, so I dialled across the 20 m band. Lo and behold, there were several stations coming in loud and clear from stateside, ZL and VK.

This was great! I put out a call and was immediately rewarded. Not only did the contact go well, but I was kindly placed on the DX-cluster. Even the more difficult to impress members of the family now had to admit that this was pretty cool, as a very modest pile-up then ensued. Refer Photo 3.

Over several hours, I made a heap of contacts on 20 and 40 metres and felt pleased that the efforts in getting to this point had been worthwhile. Eventually, the bands became more subdued. Just in time to watch a spectacular island sunset and enjoy a fabulous Polynesian sea-food dinner.

The next several days worked in a similar vein. After a morning swim or play on sea-kayaks, we would go snorkelling after lunch and then I would get on the air while everyone else had an afternoon siesta. Not a bad deal!

Some of the memorable island sights included watching the local fishermen heading off early each morning to see what their nets had caught and observing pigs hunting shellfish at low tide. On the second night we endured a moderate electrical storm, with strong winds. Despite my concerns about the dipole in these conditions, the antenna stood up well to the elements.

After three nights on 'Atata, we packed up again and boated over to Fafa Island. If 'Atata was small, then Fafa was tiny. The island could be walked across in little over ten minutes, without hurrying.

Getting across the reef was quite an adventure, as we went over at low tide. There were several ominous scraping and grinding sounds at various points and at one stage we figured that there was a very good chance we would be getting more than just our feet wet.

Never the less, we did make it through and were greeted by a glorious paradise. The beauty of a south-pacific island and coral reef in perfect sunshine is hard to convey in words, other than it was 'post-card' perfect.

We settled in to our new accommodation and I reconnoitred the beach for antenna placement opportunities. As on 'Atata, our Fafa hosts had absolutely no objections to having a dipole antenna set up and there were plenty of trees (they recalled previous visitors calling themselves 'hams', who had set up all sorts of weird bits of equipment on the northern tip of the island near the beach, so they did sort of understand what I was proposing).

After much consideration, I ended up going with a very similar configuration to the previous set-up. Refer Photo 4. Once again, I used a weighted poly-cord thrown into a coconut palm as the centre point and made up an inverted-V. So elegant was the arrangement that my wife commented on the low visual impact of the antenna and coax feed. Such unsolicited praise is to be cherished indeed! Refer Photo 5.

I was able to set up the radio and power supply on a wooden table on a sea view deck at the rear of our bungalow – perfect. Once again, the radio worked well and many contacts were made on the lower HF bands. I was amazed at the low noise levels encountered and received pretty favourable signal reports from most stations I worked.

Even those stations who found my signal strength quite low were kind enough to patiently persevere in order to complete a successful contact. I also found that the tiny earphones from my MP3 player worked perfectly well in the back of the radio and this spared others from having to hear all the HF crackle and hiss.

After a few hours, I put radio pursuits on hold and we boated out to an uninhabited island for an afternoon visit that lasted several hours.

The beach and reef here were the best we saw – simply stunning. Only the necessity of catching the favourable tide to cross back over the reef forced us back to Fafa.

Over the next three days, the overall rhythm of activity was much the same: lots of walking along the beach, exploration of the tropical forest and swimming out with snorkels over the reef. One night, the locals put on some island style entertainment with kava drinking, traditional dances and singing – we were most impressed.

Mid-afternoon each day, there was ample opportunity to fire up the rig and try the HF bands. Many contacts were made and it was great to be considered slightly novel and even a little bit 'in demand' by other stations.

Unfortunately, all good things must end and we did eventually need to return home. I packed up the portable gear (took roughly 40 minutes) and we boated back to Nuku'alofa for the night prior to flying home on Monday 6th July. The trip had been fantastic and the whole family felt extremely refreshed.

Taking the radio gear ended up being pretty straightforward and worked better than I had anticipated. I had a lot of fun working from somewhere a little unusual and was glad to hear the enthusiastic encouragement expressed during so many of the QSOs.

Would I do things differently next time?

There is not much I would change, except taking a Morse key. Like many amateur operators who learned Morse long ago to upgrade their licence, I have hardly used CW. This is a shame, because it wastes a hard earned skill and neglects a mode that is so ideally suited to low power and portable work. Given these factors, I have resolved to get my Morse 'up to speed' again and will be taking a key on the next sojourn.

Overall, I can strongly recommend taking the sort of gear I carried on this trip. Certainly a bit more fuss than just throwing in the hand-held, but definitely worth it! Now, to plan for the next trip.....

Stephen VK3SN is a member of the North East Radio Group (NERG) and enjoys working portable, especially in remote or inaccessible places.

For further reading about Tonga, try the 'Lonely Planet guide to the Samoan Islands and Tonga' (Lonely Planet Publications, 2006) and

'Making Sense of Tonga' by Mary McCoy and Siotame Havea (Training Group of the South Pacific, 2006).

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Do you have a DX story?

Or an IOTA story?

Or an amateur radio project or adventure that you can share with others?

In the first place, contact the editor

editor-armag@wia.org.au

Catherine VK4VCH leads the Queensland trifecta in 29th ALARA contest

The results of the 29th ALARA contest are out and it is the YLs from Queensland who have bagged the top three spots. It was a wonderful year for the contest as 28 logs in all were registered. Contesting is a great time for the YLs to meet each other on air, make new friends and encourage the hobby.

Keen contester Catherine VK4VCH emerged the overall winner improving her standing from third place in last year's contest. Fellow Queenslanders and VK non-member Diane VK4YL followed close behind at second place and Pam VK4PTO was at number three.

Victorian Jean VK3VIP came close to the Queenslanders' sweep of the ALARA contest with a brave effort of 1384. Meanwhile, Pat VK3OZ continued her reign this year as our top VK CW YL. Leonie VK2FHRK is the top Foundation licensee for the second year in a row.

Sharron ZL3AE was the top DXer and top ZL ALARA member. Gerald VK2HBG is the top VK OM for the fourth year in a row. ALARA is now thinking of issuing a special certificate for the top OM in each VK area to appreciate their efforts in coming on air and giving contacts to the girls.

A full table of the results appears in the contests column on page 42

100 Years

With the WIA celebrating its 100th anniversary coming up next year and ALARA hoping to use the special callsign VK100WIA, contesters in 2010 will have a chance to get some extra points and win some rather special certificates to decorate the shack with.

YL Dot Bishop VK2DB took the ALARA table to the annual Blue Mountains Amateur Radio Club Winterfest 2009 and made local headlines.

The Hornsby Advocate featured Dot and her OM John VK2ZOI in an article popularizing the amateur radio as a hobby that brings people – and sometimes, families – together. In Dot's case, her OM and three of her four children are active amateurs.

Not one to give up, she tells us that she is working on her eldest son through her six-year-old granddaughter. Her other son, Ben VK2FBRB, has just acquired his Foundation licence and has just bought his first transceiver. He is fast becoming a satellite chaser and has his ears glued, listening to ISS.

The group shot of the ALARA helpers at the AHARS Buy and Sell appears in the AHARS column on page 33.



YL Dot Bishop VK2DB staffed the ALARA table in the annual Blue Mountains Amateur Radio Club Winterfest 2009. Here she draws the door prize.



YL Dot Bishop VK2DB and her OM John VK2ZOI busy piling up QSOs at their radio shack. Photo by Ben VK2FBRB.



YLs (back row from left to right) Jilliarn VK2FAOK, Yvonne VK4FLUV, Diana VK4PTA, Daphne VK4IA, Brenda VK4FBJP, and Sheralyn VK2LUV; (Front row from left to right) Catherine VK4VCH, Marisa VK4FMAR, Pam VK4PTO, Susan VK7LUV and Kirralee Brain celebrate ALARA's 34th birthday at Gold Coast. Daphne cut the birthday cake and Susan and family who were visiting joined the celebrations that included live entertainers and plenty of fun.

DX - NEWS & VIEWS.

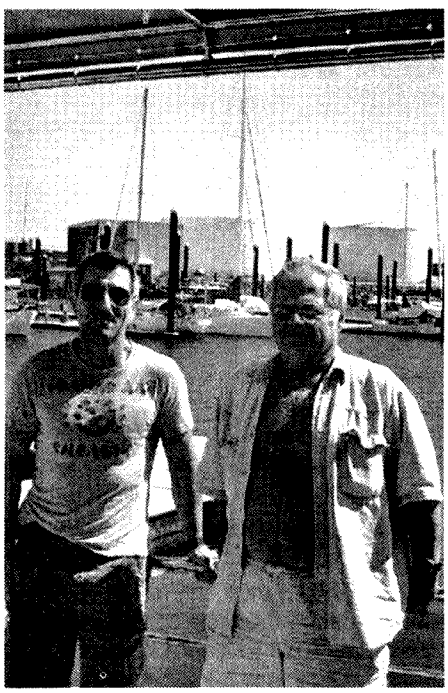
John Bazley VK4OQ
E-Mail: john.bazley@bigpond.com

Well we certainly have had a spell of large DXpeditions in recent weeks from some really rare spots.

By the time you read this we will have had **Glorioso Islands FT5GA, Midway Islands KH4D** and **Conway Reef 3D2/C**. At the time of writing the **Conway Reef Team** has arrived safely on the Island and has not been affected by the earthquake ENE of Tonga and the following tsunami.

TX3A will be active from **Chesterfield Islands** from November 23rd to December 6th 2009. This is another DXpedition by AA7JV and HA7RY with a strong low-band focus. Their priorities will be 160, 80 and 40 metres, in that order. They will be active on the higher bands the rest of the time. Please note that the actual dates of operation may change due to weather and other variables. They will provide updates as we get closer to the operation. The callsign TX3A is licensed for only 14 days of operation. Should they arrive earlier or leave later that the dates licensed, they will then operate as FK/AA7JV or FK/HA7RY.

I am sure readers will remember that this is the same team that had such appalling weather getting to Mellish Reef, so let us hope that they have calmer seas this time!



AA7JV and HA7RY

For the antenna 'buffs', they will use the same antenna that was used so successfully on Mellish Reef VK9GMW. Details are available at http://vk9gmw.com/documents/VK9GMW_ANTENNA.pdf

In addition they have developed a new RX antenna that they hope will improve their RX capabilities.

Late update: As weather is the main variable, AA7JV and HA7RY will be standing-by in Gladstone (Queensland) from 28 October, ready to sail whenever they see a weather break, long enough to get them to Chesterfield (the voyage will take 60-70 hours). Therefore they do not have a fixed date for the start of operations, they could be on the air on November 4th!

Eric F6ICX is heading back to **Madagascar** and plans to be QRV again as 5R8IC. He will be operating from **Saint Marie Island (AF-090)** from November 17th to December 15th. Look for him on 3.5 through 28 MHz. QSL via F6ICX.

4W6FR: Chris VK4FR continues to be active as his work permits from **Dili.** Activity has been mostly on 30, 20 and 17 using PSK31 and Olivia. QSL requests should go to VK4FW.

Mikhail RW3AJX is now on a two to three year work assignment in **Zimbabwe**. He has recently been licensed as Z23MS and he has been QRV on 20 SSB. QSL via UA3DX.

Wayne Rogers ZP5/W5KDJ will be in **Paraguay** operating CW and RTTY, 160-6 m, November 22-December 1.

German ops Harry DM5TI, Tom DL2RMC, Rene DL2JRM and Sid DM2AYO are heading to **Christmas Island (VK9).** The team plans to be there between November 21st and December 5th. Plans are to have two similar stations (K3, THP HL1.1) running them 24/7 on all modes on 1.8 through 28 MHz. They will be focusing on the low bands, mostly on CW. Harry says they will not spare any effort to erect good antennas as they will be using verticals on 160 through 30 metres and a 2 element Moxon beam at 12 metres (40 feet) for activity on 20 through 10 metres. They have applied for their callsigns and are expecting to use VK9XX during the DXpedition and VK9XW for the CQ World Wide CW DX Contest. They also plan to have a Website with an online log search.

Alex GM0DHZ/AA8YH expects to be back in **Tunisia** for five weeks starting November 16th. Listen for him to be operating on CW from the 3V8SS station on weekends. QRP ops can set up skeds with Alex by sending an email to his QRZ.COM email address.

After two years of silence from ZB2X Finnish op Jorma OH2KI tells us he is heading back to **Gibraltar** in November for the CQ World Wide CW DX Contest. Exact category has not yet been decided. It will depend on the possibilities of where to put the antennas up at the crowded QTH, says Jorma.

Col MM0NDX of DX World of Ham Radio, reports that Laci HA0NAR is heading to western Africa early next year. First he will be in **Senegal** from January 27th to February 10th and plans to be QRV as 6W/HA0NAR. Then from February 11th to 21st he will be operating as J5NAR from **Guinea-Bissau**. While in each country he plans to take side trips to **IOTAs AF-078 (Senegal South Group)** and **AF-093 (Guinea-Bissau Coastal Region Group).**

YN2GY in **Nicaragua** will be on for the CQWW CW with Eric K9GY operating. He prefers that you get your QSL credit on LoTW but if necessary, send direct via K9GY. He will be operating at YN2N's QTH near **Granada**. Eric's inclusive operating dates are November 26-29. He travels on the 26th and 30th. Eric has some good benchmarks to work with, K9ZO's 8th place single op all band low power in 2008 and K9NW's third place in 2007, from the same QTH. He plans to focus on CW on 30, 17 and 12 m before and after the contest for those looking for Nicaragua on those bands.

An international team is heading to

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
vk7rh@wia.org.au

Radio St Helena

I have been informed that Radio St. Helena will be again making a special broadcast on November 14th from 2000 until 0130 on the 15th.

The transmission will be on 11092.5 USB on a former frequency that was the mainstay for external communications. The original sender is now in a museum on the island but I am not sure if this is the sender being utilised.

Some DXers did donate a log periodic beam which is used for the different regions. The South Pacific seems to miss out although they tried unsuccessfully to beam to NZ at an earlier attempt.

This event will be on early Sunday morning and I have yet to hear this station direct due to extremely poor propagation yet have been fortunate to do so using several remote sites on the Internet.

It is not the same as hearing it on your own receivers although it is much clearer.

China

There was a noticeable increase in transmissions from China leading up to and including the 60th Anniversary celebrations in Beijing on October 1st.

The Chinese at the same time dramatically increased their jamming of external stations broadcasting into the PRC. There is also an apparent OTHR signal which can easily be observed during our local evening hours over a wide swathe of frequencies from 5.7 to 5.9 and 6.7 up to 7.0 MHz and it often strays into the lowers segments of 40 metres.

There has been speculation that it may be located on Hainan Island in the Gulf of Tonkin.

Incidentally a new station appeared early in September, calling itself the "Voice of Beibu Bay". This is what the Chinese call the Gulf of Tonkin. This too is believed to be on Hainan. Programming is in Indonesian, Vietnamese, various Chinese dialects and Tagalog.

I have heard English ID announcements but no programming yet in that language. It is on 5050 and 9940 from 1000 to 1400 and again from 2000 till 2300. 9940 has interference from another broadcaster in Chinese at the same times but I am unable to positively identify who it is and 5050 is in the clear.

Radio Australia

Radio Australia is celebrating its 70th birthday next month and there will be special programming throughout December to commemorate this occasion.

It commenced early in December 1939 from Melbourne and these days it mainly relays Radio National. I believe that they may be commencing programming in Burmese. The only foreign languages I have recently heard from RA are Indonesian, Indigenous Pacific Island dialects and Standard Chinese.

Ecuador

HCJB did close down their Pifo senders on 30th September. I believe 6050 remains on in local indigenous languages but it is unclear whether this is from Ecuador. Test broadcasts were made from Chile and possibly from French Guiana.

Well that is all for this month. Until next month, all the best in monitoring.

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Samoa (5W), Tonga (A3) and South Cooks (E5) between mid November and mid December. The team includes Andrea IK1PMR, Claudia K2LEO/PA3LEO, Wil PA0BWL, Joe AA4NN, Franz OE2SNL, Gerhard DJ5IW and Kenneth OZ1IKY. First stop Samoa between November 10th and 17th. Next will be Tonga from November 18th to December 1st and then Rarotonga, South Cooks, starting around December 2nd to 5th for one week. Plans are to have two stations QRV with amps for activity on 1.8 through 28 MHz. Callsigns have not yet been finalized. Andrea has a Web page with more details at http://www.ik1pmr.com/plans/a3/

Robert S53R has just arrived in **Khartoum, Sudan**, but his radio and amp were, at last report, still on the way from Slovenia. He will try to get on the air as soon as he can, hoping for the callsign ST2X. Paperwork is in process. Robert thinks he will soon be able to use the log periodic on the roof of his office building that is at about 25 m off the ground and no one has been using it. It should be pretty effective. At his residence he will have an 80-10 m full size vertical, hoping to be QRV by the end of September. For those who need CQ Zone 34, this should be your chance.

Jim ET3JD in **Ethiopia** is close to being on the air. He says in Ethiopia the main emphasis is on licensing the equipment rather than the operator, and thinks he will have that all worked out by early October. Jim has set up a web site to keep us apprised of his progress: http://www.deloach.net/ET3JD.html Jim and his wife have been in Addis Ababa for two months now and are settling in well, he says. Shipping restrictions have prevented him taking in a big beam, but he plans to get creative with wire antennas. He has been in touch with the Ethiopian Amateur Radio Association, EARS, and plans to be very active from the ET3AA club station, led by ET3SID. He will be on PSK31, SSB, CW and "maybe some RTTY for contests," from 40-15 m. He plans to focus on 30 and 17 m.

FK/JA1NLX expects to be QRV November 19-24 from **Ouvea Island** in the **Loyalty Islands, New Caledonia**. This is **IOTA OC-033**. He plans to be on 80, 40, 30, 20, 17, 15, 12 and 10 m CW and RTTY. Keeping his gear less than 50 pounds (23 kg), he will have an IC-706MKII and 4 m long portable antenna. QSL to JA1NLX via the bureau or LoTW or direct with an SASE. He will make an on-line log available when he gets home to Japan.

Good luck in the pile-ups until next month.

Special thanks to the authors of The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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VK7 moves closer to VK0

Roger Nichols VK7ARN

THANKS TO THE VK7 CLUBS and several individuals, VK7 is reasonably well serviced by amateur repeaters. The linked VK7RAD and VK7RHT provide the primary cover in the south east of Tasmania.

However, as Tasmania is a a rather bumpy island, the repeater coverage has some holes in it.

One of these holes was the Huon Valley and lower D'Entrecateaux Channel (between Bruny Island and the 'big' island. We will ignore the other 'big' island further north).

This hole has now been filled by the addition of VK7RBI which, for practical purposes, is a simplex link into the RHT RAD system on 147.300 MHz with an access tone of 114.8 Hz.

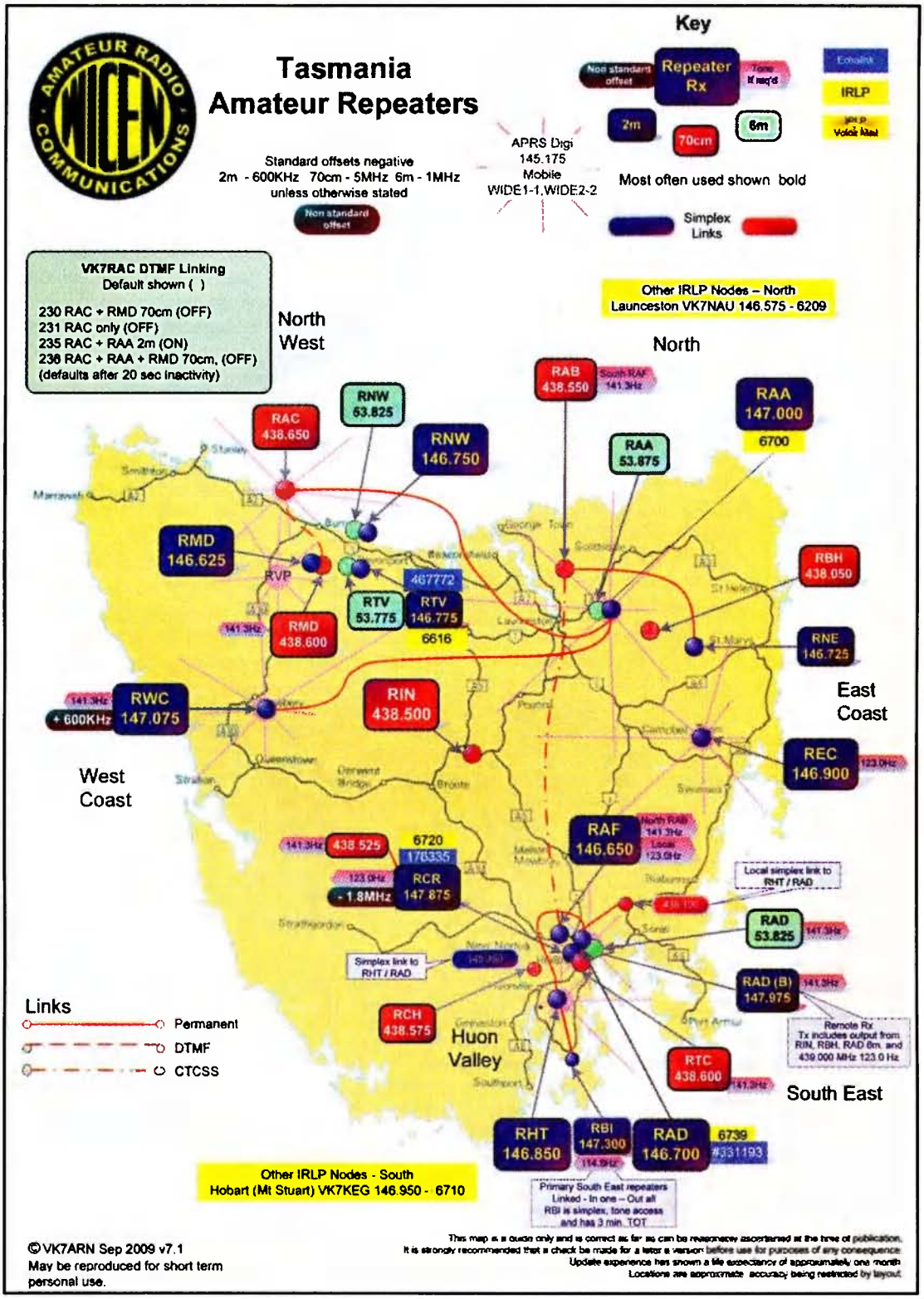
Located on the western side of South Bruny Island, the system relies on propagation over salt water and provides cover into much of the Huon Valley and as far south as Cockle Creek.

So, what has this to do with the 'Apple Isle' moving closer to the very big (and very cold) island to the south? Well, Cockle Creek is as far south as you can drive in Australia.

VK7RBI has been established by members of WICEN Tasmania (South) in conjunction with the Radio and Electronics Association of Southern Tasmania (REAST).

Their next project is a very long Yagi to extend the cover into VK0, Hi.

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A map showing amateur radio repeaters in Tasmania.

Contests

Craig Edwards VK8PDX (ex VK5HRT)
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Contest Calendar for November— December 2009

November	**7/8**	**Ukrainian DX Contest**	**SSB/CW**
	8	**Straight Key Weekend Sprintathon**	**CW**
	14/15	**Worked All Europe**	**RTTY**
	14/15	**Japan International DX Contest**	**SSB**
	14/15	**OK-OM Contest**	**CW**
	21/22	**Bulgarian DX Contest**	**SSB/CW**
	28/29	**CQWW DX Contest**	**CW**
	28/29	**Spring VHF/UHF Field Day**	**CW/Phone**
December	5/6	ARRL EME International (50-1296 MHz	All

We are deep in the contest season and it is just a matter of picking and choosing your event and setting some personal goals.

As I write this column I have just finished participating in the SSB Scandinavian Activity Contest and also CQ WW RTTY and this coincided with a weekend where I had many family commitments.

So I just used CQ WW RTTY as a way of getting new DXCC entities and band countries in the log. I checked 20 m at 1200 for the start of SAC and was excited to see short path to Europe open in the late evening to make DXing fun again.

Just two weeks earlier during the Worked All Europe SSB event making QSOs was really hard work. So hopefully by the time you have this magazine in your hands you will be able to reminisce with a smile about all the DX that is in your logbook from Oceania SSB/CW and CQ WW SSB.

There are still some big events to dive into during November and the obvious jewel in the crown is CQ World Wide CW.

There is something for everyone this month with things like Worked All Europe RTTY, Spring VHF UHF Field Day and national contests from Japan, Ukraine, Mongolia and Czech Republic/ Slovakia.

The results of the inaugural VK Shires Contest are out and I am sure this event will take pride of place in the VK contest calendar. I am certainly looking forward to it next year.

You will have to excuse me if this month's column is a little short and if I am rather succinct.

All of my spare time has been spent in front of the radio during contests and sending out QSL cards. This is a great problem to have after the majority of us have been going through a DX dry spell for so long!

THE BIG ONE – CQ World Wide

With the RTTY and SSB versions under our belt, the excitement continues with CQ World Wide CW for 48 hours on November 28 and 29. The official website of the CQ WW is www.cqww.com/ and a copy of the rules can be obtained at www.cq-amateur-radio.com/cqwwhome.html

VHF and UHF Contests

For those who enjoy the fun of contests that occur north of HF, then please visit the VK VHF DX website run by Guy VK2KU. The link for contests is www.vhfdx.radiocorner.net/contests.html

VHF UHF Field Day

The Spring VHF UHF Field Day is on November 28-29 and the full rules were in last month's AR. The link to the contest page is www.wia.org.au/members/contests/vhfuhf/

Ukrainian DX Contest

The rules for this event are at www.ucc.zp.ua/urdxc2009rules_eng.htm

Worked All Europe RTTY

The rules for this event are at www.darc.de/referate/dx/xedcwr.htm

Japan International DX

The rules for this event are at http://jidx.org/jidxrule-e.html

OK/OM DX Contest

The rules for this event are at http://okomdx.crk.cz/g.html

LZ DX Contest

The rules for this event are at http://lzdx.bfra.org/newsen.php

Mongolian DX Contest

Date: Saturday November 21 2009

Time: 0000 – 2400 UTC (24 hours)

Modes: SSB and CW

Bands: 160 m – 10 m (no WARC bands)

Categories:

- Single operator multi-band CW low power (100 W max)
- Single operator multi-band SSB low power (100 W max)
- Single operator multi-band CW high power
- Single operator multi-band SSB high power
- Multi operator single Tx mixed high power
- SWL all band mixed

Exchange: RS(T) and CQ zone

Every station can be contacted only once per band.

Points:

- QSOs with own country: 1 point
- QSO with different country on same continent: 2 points
- QSO with another continent: 3 points

Multipliers: DXCC entities (except for JT) and each different JT callsign counts as a multiplier as well.

Final score: total QSO points multiplied by the sum of DXCC entities and JT stations on all bands.

Logs are due on December 31 2009 and should be sent to Mongolian DX Contest, PO Box 830, Ulaanbaatar 24, Mongolia or jtdxcontest@gmail.com. Enquiries to jt1kaa@gmail.com.

29th ALARA Contest Results

29/30 August, 2009

See table below.

SUMMARY:

ALARA members: 15 (including 4 DX members)

Non-member YLs: 1

OMs: 11

Club station with 4 participants: 1

TOTAL LOGS: 28

Comments on ALARA Contest Results

Congratulations to all who participated in this year's ALARA Contest.

The VK4s lead the way with Catherine VK4VCH being the top overall winner

Name	Score	Comments
Catherine VK4VCH	2010	Top overall, Top Phone, Top VK4 ALARA member
Diane VK4KYL	1832	Top VK non-member
Pam VK4PTO	1526	
Jean VK3VIP	1384	Top VK3 ALARA member
Pat VK3OZ	630	Top VK YL CW (CW score 140)
Gerald VK2HBG	503	Top VK OM
Leonie VK2FHRK	394	Top VK2 ALARA member, Top Foundation Licensee
Sharron ZL3AE	314	Top DX YL, Top DX CW, Top ZL ALARA member
Dot VK2DB	304	
Lesley VK5HLS(now VK5LOL)	267	(Check log)
Mike VK3AVV	254	
Port Stephens ARC (VK2AOJ)	44	Top VK Club Station (Operators: Diane VK2FDNE, Melisa VK2FMAI, Susan VK2FSUE, Richard VK2FRKO)
Rosanne VK7NAW	239	Top VK7 ALARA member
Paul VK5NE	239	
Tom VK4ATH	213	
Gwen VK3DYL	211	
Graeme ZL2APV	107	Top ZL OM
Chris VK2LCD	106	
Roland VK4VDX	102	
Jenny VK5ANW/3	90	
Celia ZL1ALK	54	
Graham VK4GLC	44	
Mark VK4MON	44	
Keith VK5OQ	43	
Shirley VK5YL	40	Top VK5 YL
Mary WX4MM	28	Top USA ALARA member
Tony VK3VTH	13	
Elizabeth VE7YL	5	Top VE ALARA member

VK3

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

The third quarter for the year started off with our Annual General Meeting. The main office bearers elected for the next 12 months were: President John Silver VK3LJS, Vice President Keith Vriens VK3AFI, Secretary Keith Stickland VK3XKS, and Treasurer John Collins VK3JCC.

The majority of our meeting nights for July and August were taken up with a construction project. As reported earlier we decided to build as a club project the "VHF Powermatch" that had been published in the Electronics Australia magazine in 1990.

We had made a number of projects in the past but this was the most ambitious project we have undertaken. The Powermatch is basically a volt meter with plug in modules. It is capable of measuring RF power, SWR, antenna impedance, and RF voltage from 50 to 450 MHz.

So far over 20 measuring heads have been constructed, and boards have been produced for all plug in modules. Again these modules will be constructed by the members over the next couple of months.

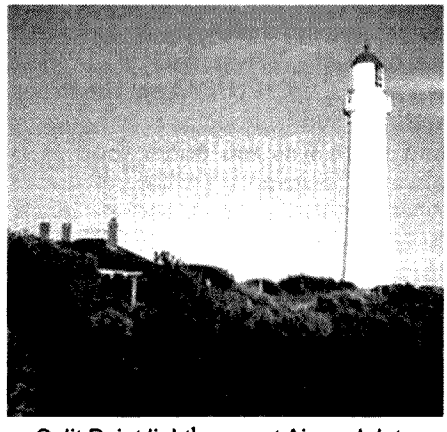
As stated this was a most ambitious project, and our thanks must go to John VK3JCC who produced all the printed circuit boards at no cost to the members.

During August we again participated in the International Lighthouse/Lightship weekend. Our usual venue was the Split Point lighthouse at Aireys Inlet. This lighthouse is situated on the cliffs at the start of the Great Ocean Road.

It is unfortunate that due to lack of camping facilities at the light house operation was confined to the Saturday only, and if we wanted to operate from that location on the Sunday we would have had to dismantle the station and set it up again on the Sunday. However operation on the Saturday was very successful and we were able to promote amateur radio to the many lighthouse visitors.

During September antennas again were featured. Jim VK3VBC gave us a detailed explanation on how he constructed his "squid pole" antenna.

Jim normally uses this antenna on the beach near his home and says that it is the best antenna he has used for working DX. He also said that he has used the antenna "Pedestrian Mobile" which I am sure you will agree would be a sight to behold.



Split Point lighthouse at Aireys Inlet . Photo K. Eggleston.

Bill VK3YHT also showed us how to construct a G5RV antenna, and highlighted the pitfalls of construction.

Apparently there are two different types of G5RV: those that work well, and those that do not. Bill outlined the method he employed to construct the open wire feeder for this very popular HF antenna.

Our Wednesday group of retired people has as ever been busy working in and around the rooms. Many tonnes of scrap metal have been collected, sorted and sold to help finance the club.

As a result of this we were able to buy a new dual band FM transceiver that has been installed in our operating console. Another acquisition was a new barbeque that I am certain will get a lot of use during the warmer months of the year.

Visitors to Geelong are reminded that they are always welcome to call into the club.

Meetings are held every Thursday evening at 8 pm local time at 237A High St. Belmont. If you require directions call VK3ANR on 146.525 MHz FM.

Or you might like to have a cup of coffee with the Wednesday group who meet between 9:30 and midday.

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followed by Diane VK4YL the top VK non-member and Pam VK4PTO with a mighty score of 1526 points.

Jean VK3VIP was the only one close to them with her sterling effort of 1384. Congratulations ladies!

Pat VK3OZ is our top VK CW YL again. I really appreciated Pat's letter which said how much she enjoyed the contest. I would like to think that this is what the ALARA Contest is about: a lot of friendliness and opportunities for ladies to come up on the air.

Gerald VK2HBG is the Top VK OM for the fourth year in a row. Come on OMs, he needs a bit of competition!

Next year we are hoping to issue a certificate for the top OM in each VK area. We really do appreciate the OMs coming up and giving the girls lots of contacts.

The ALARA Contest is a great opportunity to try out Mike VK3AVV's computer logging program. It certainly makes my life easier as contest manager.

I would also like to see Club Stations come up in each VK area so that our Foundation licensees can have the opportunity to gain confidence on the air. Leonie VK2FHRK has taken out our Top Foundation licensee trophy for the second year in a row and I am sure she would not mind if there were serious competition.

We had a few DX contestants: Sharron ZL3AE, Celia ZL1ALK, Mary WX4MM and Elizabeth VE7YL. Thanks ladies for making the effort to participate. Hopefully more DXers will come on board with the improvement in the solar cycle.

Next year we are hoping to use the VK100WIA special callsign during the contest. There probably will be some extra points to be gained if you contact the call. We will all be celebrating the fact that the WIA is 100 years old. Quite an achievement.

33, Lesley VK5LOL, ALARA Contest Manager **ar**

News from

VK3

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

International Lighthouse and Lightship Weekend

Once again this year, the GARC had use of the former TocH dormitory buildings next to the Point Lonsdale lighthouse. This is a fantastic venue with all mod cons.

The heating and power there make the operation so much easier, leaving participants to only have to think about what radio gear to bring. Arriving at 10 am local time, it was again a cool and slightly overcast morning. Unlike last year this time there was no rain to hinder our set up.

Ken VK3DQW was there already and had his 160/80 m array in the air. On arrival the team began setting up the station and various antennas.

In all there were counterpoises for 160 m and 80 m, a G5RV and the squid pole for HF and small Yagi for 2 m.

During the weekend some ten club members turned up for sessions of between one hour and the weekend.

Inside the building there were four separate stations set up. Ken VK3DQW manning his 160 m station, Garry VK3FWGR set up a 40 m station, Ken VK3NW and Nik VK3BA set up a multi-band and D_STAR station with VK3FUNY on 20 m.

Operators switched around each station as band conditions changed but there were times when it got very confusing as there may have been three operators yelling at microphones at the same time on different bands.



ILLW Antenna Erection

During the morning session Ken VK3NW suggested as there were so many Remembrance Day contest stations all over the bands we should "have a go at it".

So we incorporated the ILLW and RD contest into one activity. We made 352 contacts and scored 282 points in the Remembrance Day Contest in the Multi Operator Phone Category. Next year Morse will be included. Ken VK3NW was the major player and recorded at least half of these contacts.

We enjoyed a wonderful evening of live entertainment with VK3NW rather exhausted, providing the floor entertainment in trying to assemble his bed.

Vanessa VK3FUNY kept the group well fed and watered as is her custom and there was too much food as is always the case.

Next morning the skies were black. A few contacts were made but both the bands and weather conditions were looking bleak.



VK3PY, VK3DJ & VK3FASW

A decision was made to pull up stumps early before the weather got really nasty. Too late, no sooner than we started the pack up process, the heavens opened up.

Our thanks go to all the members and guests who participated during the weekend.

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Peter VK3ZAV operating

Amateur Radio Victoria

Centre Victoria RadioFest No. 3

This major amateur radio event is on Sunday 14 February 2010. At the Kyneton Racecourse an hour from Melbourne, Ballarat and Bendigo.

Proudly supporting the WIA centenary celebrations.

Sales space bookings and more info:

www.radiofest.amateurradio.com.au

News from

VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

Repeaters Update

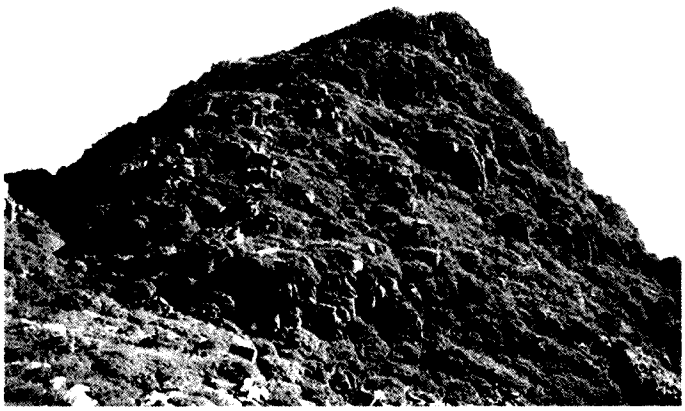
We have had some wild and wet weather in VK7 over the past months and many issues with antennas, repeaters and broadcasts have resulted.

VK7RAA on Mt Barrow which covers much of the state was off air on the Sunday 27 September and thanks go to Tony VK7YBG and Anne VK7FYBG who braved the icy weather to go up Mt Barrow and fix it. Thanks also to Anne for reading the broadcast later that night for north and north west amateurs.

The 2 m repeater VK7RTV has now been commissioned at Gawler in the NW and is available on Rx 146.775/ Tx 146.175. Thanks to Graeme VK7AQ for all his work on getting this repeater up and going and for supplying the equipment. IRLP Node 6616 has also been switched to this repeater.

VK7RIN on Barren Tier in the Central Highlands was the victim of a lightning strike, but thanks to Brian VK7RR, it is now providing service again not only for broadcast relay to VK7RAA but also for comms and emergencies. Thanks to Joe VK7JG and Brian who look after and keep this repeater running.

There is now a "deep" south extension to the VK7RHT/RAD repeater in the southern VK7. VK7RBI is a simplex link on 147.300 MHz (CTCSS 114.8 Hz) into the main VK7RHT/RAD repeater system. It covers much of the Huon/D'Entrecasteaux area. This new repeater and linking has been provided by WICEN Tasmania (South) and thanks to this group for making it available.



Mt Barrow at about the 1400 m level on a fine day. The repeater building is on top of this hill and you can only walk there!

Northern Tasmania Amateur Radio Club

Thanks to Norm VK7AC for his insights on his logging programs and propagation prediction tools at the September NTARC meeting. NTARC is now an incorporated body, following the paperwork being complete and arrival of the certificate. Now the hard work begins....HIHI! Thanks again to Bill VK7MX for all his work on developing the rules.

Cradle Coast Amateur Radio Club (CCARC)

We welcome Scott Wilson, who was successful in sitting his Foundation licence assessment in September and was applying for either VK7FTTT or VK7FRAT. Welcome to the airwaves Scott. If you are interested in becoming a radio amateur in NW VK7 then please contact CCARC learning facilitator, Keith Winkler VK7KW on email: kwinkler@internode.on.net

WICEN Tasmania (South)

WICEN holds a net each Thursday evening on VHF. Prior to the commissioning of VK7RBI there were many RF black spots making it impossible to access the net.

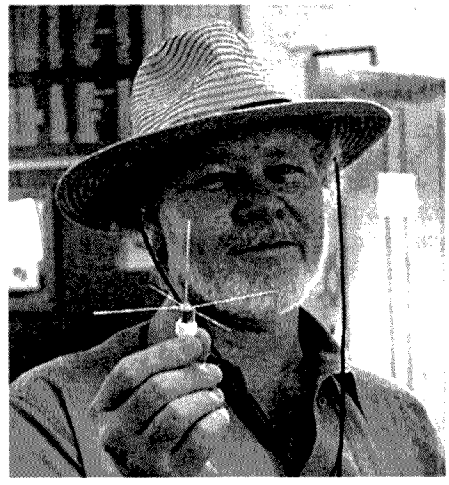
This group has been experimenting with an idea from the September 2009 edition of the ARRL's QST magazine where they use Skype and a radio interface to extend the range of the net to areas that have internet access but not RF access.

This has been very successful with Michael VK7FMRS being able to join the RF net through a Skype conference call.

The group is looking into the many opportunities this technology presents.

North West Tasmanian Amateur TeleVision Group

The October meeting discussed the club's involvement in JOTA at camps at Burnie Scout Hall, Paton Park, Ulverstone and Camp Boomerang in Port Sorell on HF, VHF and UHF frequencies and modes including APRS, thanks to Jim VK7JH. The meeting finished up with a presentation from Tony VK7AX on all things ATV. Tony has been running ATV in the NW for many years and has a great deal of skill and knowledge in this area. Thanks Tony.



Tom VK7TL with the ground plane he is currently using to receive the ATV Group's 23cm DVB-S transmissions – he is line of sight!!!

Radio and Electronics Association of Southern Tasmania

REAST's ATV nights have been a roaring success with many amateurs and friends coming along. In the last month there has been show and tell on dishes, GDOs, ferrites, the latest magazines and interesting articles, interviews and many public domain videos including programs from the Labrats.TV series.

Our new ATV studio is currently being built and we will be moving from 23 cm DVB-S DATV to 70 cm DVB-T DATV and our new Digital ATV (DVB-T) transmitter that is on its way to us. We are even working on a chroma-key background screen. So standby for some great DVB-T - DATV in Hobart in the very near future. **ar**

News from



Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

Bunya Mountains & District

The Bunya Mountains & District Amateur Radio Club is hosting a HAM AND WINE FEST 2010 on January 30th next year at Maclagan. Come along and join in the fun of a ham fest towards the west. There will be the usual new and preloved gear for sale by various groups and individuals.

Or do you have an excess of home grown fruit and vegies you would like to have on sale; or perhaps you have a non-radio related pastime you want to display. Tell us about what you would like to show off.

Also if your group would like to do a demonstration of any aspect of our hobby, you are most welcome to do so, this could be: Home brew gear, servicing gear, APRS, D-STAR, slow scan. This list is long, so we are looking for expressions of interest.

All table bookings will be $10 per table, this includes entry for one person, and others will be allowed in before 9 am to assist with the setting up. Bookings will need to be made by Friday the 15th January 2010, late bookings will be accepted, but an extra fee will apply. No buying or selling before 9 am.

There are two wineries nearby, and one of these has a B & B or you can visit the beautiful Bunya Mountains near by, there is camping and picnic grounds available as well as cabins and houses to rent, if you wanted to stay a night in comfort. What a good way to kick off the year, come along and enjoy. All the proceeds from this event will be used for a badly needed upgrade to the club's repeater installation up on Mt Kiangarow at the northern end of the Bunya Mountains. Contact Neil VK4NF at holmzie@bigpond.com or Rick VK4NRL at ricklammas@optusnet.com.au

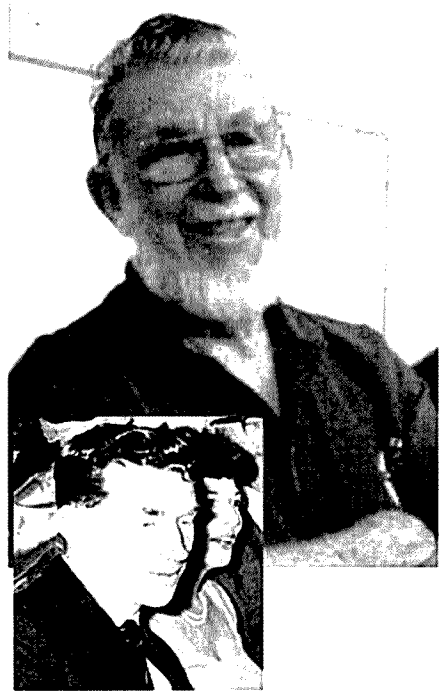
Bundaberg

Some things get better with age and those present at the Bundaberg Club AGM could attest to that as Rusty McGrath VK4JM was elected President again.... and before turning the page thinking that is not newsworthy, perhaps the fact that he was also Club President 45years ago will change your mind.

At the young age of 79, Rusty must surely be one of the most active presidents in amateur radio today and he leads the Bundy club by fine example. From his presidency in 1964 and 1965 he spent many of the intervening years as club Secretary only taking time away to work with Scouts when his children were young.

Currently he heads up the local WICEN operations and trains a team of 12 Bundaberg Club members. As the WIA Learning Organiser, he and the assessment team have put through 29 candidates in the region since the new Foundation assessment process began.

VK4JM and his lifelong partner VK4JJ are the cunning *Mr & Mrs Fox* as the club enjoys a resurgence of fox hunting. The sport had fallen away from its height 25 years ago but thanks to Rusty and workshops on procedures, antennas and attenuators the club now holds a 2 m foxhunt every month with keen participants and a lot of fun.



VK4JM: President BARC 2009, and with VK4JJ in 1965 (inset).

It was with enormous pride that Rusty once again took the podium at the AGM to accept the nomination of President and enjoy a well deserved accolade from the members.

Anyone passing through the area would have noticed the vast improvement in the repeater footprint since the replacement of antennas on Mt Goonaneman. The installation of APRS on VK4RBG-3 has filled a gap in the east coast APRS network that has been well received.

As all clubs know, "stuff" does not just materialize high up on mountain-tops and it took many willing hands to drag heavy equipment up that mountain once again. Bundy is all about the future and through the web presence http://www.barc.asn.au/

Members are encouraged to write articles for a resource area. Articles such as VK4UD's wireless internet solutions, VK4SR's gel battery experiences and VK4JRO's TVI filter articles ensure the website has content as well as club information.

Youth have not been forgotten either as BARC gears up to run a Bundy Youth Electronics Group. Popular many years ago, the youth classes led to apprenticeships and lucrative careers so it is hoped the BYEG will see a new generation of Bundy Youth learn to solder, make circuits and hopefully get the electronics buzz. What is next for the Bundy club... well the sky is the limit. Visit the website and check out the resource links. For those who twitter, BARC keeps all informed via twitter.com/vk4bw

WICEN

WICEN Queensland holds a net every Sunday on 7075 kHz from 8:30 am (2230 UTC) If conditions are poor the net moves to 3600 kHz.

Cheers VK4VKR **ar**

See Errata page 26

Keith VK6RK
vk6rk@wia.org.au

VK6

A beautiful set of numbers: 2,881,920 and 3,629,462

Northern Corridor Radio Group

John VK6NU reports

Hi all. The Northern Corridor Radio Group (NCRG) travelled to Muresk Agricultural College once again to take part in the Oceania Phone contest. (We left the NCRG club shack in the capable hands of Steve VK6IR and he did a tremendous job doing the contest from there).

Muresk is an excellent portable site with lots of space for antennas, individual bedrooms and showers, and with a large operating room and a kitchen/chat area for socialising. The college is deserted at the weekend and we virtually have the place to ourselves, which is perfect for radio contesting. This is a fun weekend for us, but we do try and put in a decent score.

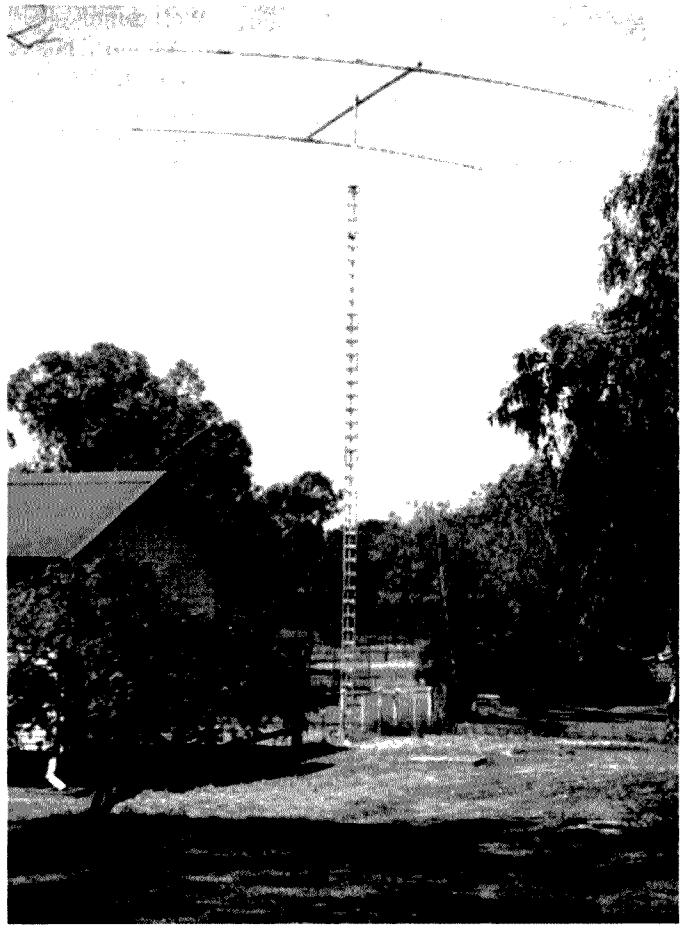
All gear was transported to site on Friday afternoon. It does take quite an effort to set up antennas, towers and all other equipment. It is funny when pulling up a two element 40 metre beam to 14 metres, you never seem to have enough manpower! It was definitely time for a beer after that effort! The three element tri-bander at 13.5 metres seemed a breeze!

We were lucky enough to have a 21 metre lightweight tower to support our dipoles for 80 and 160 metres. However a note to myself for the future might be 'do not use good quality sockets as weights for the antenna launcher!' It took a while to get the line across the T section on the light tower due to the wind and after losing two sockets in the trees and long grass the effort was abandoned for the Friday evening.

On a windless Saturday morning a 12 mm socket sailed over the T section on the first go and we were able to pull up the support line fairly easily. The 'antenna launcher' is a very useful tool for field day but be wary about importing them. Just ask Phil VK4BAA. Luckily I am still not on the International Terrorist list. So with fantastic SWR on all antennas we had about eight hours before the contest to relax and take in the fine weather.



VK6BEC operating the NCRG station in the Oceania DX SSB contest.



The NCRG 40 metre beam on its portable 14 metre tower at the Muresk Agricultural College.

The Contest

We only used one radio and did not use a multiplier station. We used our new call sign VK6NC and only slipped back to VK6ANC once or twice when we got tired but were quickly set right by others present in the room. We started on 20 metres and got nearly 100, mostly Europeans, in the log in the first hour, then moved to 40 and had a good run.

Forty metres was the best band and with the higher points we stayed on there with quick trips to 80 and 160 to pick up the odd one. We had some good runs on 20 and 40 but not a lot on 15 and nothing heard on 10 metres. Sunday morning was quiet but 20 opened up towards the end, long path to

Europe, with some decent numbers worked.

We scored four times as many points as last year and we are happy with our score. We were all packed up and on the road by 1630, only 30 minutes after the contest had ended. Not bad when you have 27.5 metres of tower, two beam antennas, a BBQ, and other bits to load on the trailer.

We were a little light on member numbers travelling this year but those who were there for the first time could see why we rave on so much about the place. We may only have one more year at Muresk as there are changes to the College structure and we may lose the opportunity to operate from there. Fingers crossed. A fantastic time was had by all and the Friday night and Saturday BBQ cooked by Zelkjo were worth the trip even if we had worked no DX.

Interesting to hear other stories, from your weekend!

Contest: Oceania DX Contest

Callsign:	VK6NC
Mode:	Phone
Category:	Multi operator - Single transmitter (MS)
Total score:	2 881 920

Operators were VK6EH, VK6NU, VK6IA, VK6RK, VK6YV and VK6BEC.

The NCRG club shack was taken over for the contest by Steve VK6IR, a NCRG member who provided this report, and who seems to have also set a new record for the Multi Single class.

Steve VK6IR reports

Hi all, what a weekend. I arrived at the NCRG at 7.30 pm on Friday, went into the shack, well an empty room actually, as the club station was portable and they had taken it all with them! So I set about bringing in all my equipment - radio, amplifier, computer and a host of sundry items - so the evening was spent setting it all up.

Does anyone know why computers and radios will not talk to each other on the first attempt? Then I operated until about midnight. I was going to sleep in the air conditioned bedroom at the station but I decided to go home, a 40 km drive. Thus I was up bright and early, I do not know why, the sleep would have been better!

With no radio or computer at home I was bored, so at 11 am I was off to the club to do what I do best - make lots of noise.

Soon it was time for the starting gun to go off - where had the sunspots gone, they were here yesterday but gone today!

Fifteen metres had not a sound, and I mean not a sound, no powerline noise, no plasma TVs and no internet connection so, nothing! I went to 20 metres, a few signals but not much! So anyway who needs sunspots, just get on with it! 0800 UTC arrived, JA3EY tries to destroy my 'S' meter and we were off and running!

Three litres or water, ten cans of coke and a whole chocolate mud cake later it was all over. Well not quite - the station had to be pulled apart and loaded back into the car! But first some food, thank goodness for Red Rooster! Now it was time to rest.

The boys arrived back from their adventure, with the news of their great success in the Multi-Single category 2,800,000 points. A new all time record for the category I think. Well done!

As with last year I would like to thank the NCRG for hosting my efforts again and I hope I can operate from the club again next year. OK lastly what did I score! Single Op - 3,629,462 was my claimed score.

Hills Amateur Radio Group

Work on the tower at the HARG shack has been hampered by the weather, but members were pleased that the antennas mounted on it have survived recent bad weather in Perth. A four element tri-band HF beam is mounted at 20 metres on the tower, and the club are planning to enhance their 40 metre coverage with another antenna.

In the meantime, the group have moved their members-only email list to their own domain which has been provided by Bill VK6YW, and Bill is also developing a website for the club, which will be located at www.harg.org.au

HARG members will be taking part in the CQ World Wide contest, from the club hall in Lesmurdie. Keep an ear out for them on the weekend of 24th October. They are also planning a portable station for the John Moyle Memorial Field Day next year, and hope to make some good contacts during that event.

The HARG meets twice each month - formal meetings are held on the last Saturday of each month and more informal social and project get togethers on the 2nd Saturday of each month. New members are always most welcome!

Finally I have received an email from Bernd VK6AA who tells me that, with a little luck, WA will be hosting two well known DXpeditioners in late November.

If all goes to plan they may be into giving a talk at the NCRG meeting on 24 November. We will wait and see, and if it does happen we will publicise it on the VK6 news section of AR news and invite anyone who may wish to come along.

Over to Bernd VK6AA:

I received an email from my old friend Dietmar DL3DXX who has asked if he and Tom DL5LYM could join us in CQWW CW in November, and double the number of operators in our Multi/Single team to 4.

Both Dietmar and Tom have been members of a number of DXpeditions in the past and are great CW operators. I not sure when they would be arriving but if in Perth on Tuesday, 24 November, I am sure they could put together a bit of a presentation at the club about their recent DX ventures - VK9DWX, VK9DNX, BQ9P, VP6DIA etc).

Also, Dietmar is a top 160 metre man with a wealth of experience on low band antennas which could be of great value for the club's low band set-up.

I apologise if this month's column has been a bit NCRG orientated but if other groups do not provide the news I cannot pass it on! 73 and good DX to you all, and dig out some news for the next one!

Keith VK6RK vk6rk@wia.org.au

ar

David Giles VK5DG

Sunspots! We don't need no stinking sunspots!

This month's report is on more launches during September. But first something to ponder about a subject dear to most of us.

Solar inactivity is good

Hardly a week goes by before I hear or read someone complaining about the current lack of solar activity. When it comes to satellites, the sun is a two edged sword. Satellites need light from the sun to provide power and stop them from freezing in space. But the sun also sends dangerous particles and other radiation detrimental to the satellite's health and causes communications difficulties.

The high speed protons ejected by the sun degrade silicon based solar cells. This was discovered very early in the space age. Solar panel power outputs can typically reduce by 14% over the first seven years. Geostationary satellites are launched with 25% extra solar cells to allow full power output at the end of their estimated lifespan. With higher solar activity comes more high speed protons and other damaging radiation [1].

Signals from HF operators propagate around the Earth by bouncing off the 50 to 600 km high atmospheric layer known as the ionosphere. It is mainly composed of particles of atomic oxygen and nitrogen at very low density. These atomic particles are from gas molecules which have been ionised by the ultra violet and X-ray radiation from the sun. As we are experiencing now, solar activity is low and the amount of ionisation is also low. Hence the ionosphere is currently not highly ionised and reflects radio waves poorly. At peak times of solar activity the ionosphere is intensely ionised allowing radio signals of higher frequencies to be reflected. This causes several problems for satellite operations. The first problem is that your signals will not reach the satellites. Uplink signals in the 2 m and even the 70 cm bands will bounce off the ionosphere back to Earth, especially when you are pointing your antennas at the horizon. The second problem is that transmissions from the satellites will bounce off the ionosphere and go back into space.

As solar activity increases, the amount of energy absorbed by the ionosphere increases which heats it up. As gasses heat up they expand so the ionosphere also expands into space. Now we have more gas particles colliding with low orbit satellites. This is known as drag and is a noticeable problem for satellites at heights of 500 km or less. OSCAR-56 (Cute1.7+APD) was launched into an orbit with a perigee of only 290 km in

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net
The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP
Maddens Plains repeater on 146.850 MHz

VK2RIS
Saddleback repeater on 146.975 MHz

VK2RBT
Mt Boyne repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne,
438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm.

These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

February 2006 and expected to last only one year. It is predicted to burn up during the last quarter of 2009, almost two years later [2]. One study into the orbit of the ISS calculated that at solar minima, the ISS will lose 80 m of altitude per day (or 28 km per year). At solar maxima this increased to 400 m per day (or 147 km per year). The ISS uses rockets to boost its orbit several times per year [1].

One satellite that was able to show some very interesting propagation during times of high solar activity was RS-12/13. RS-12/13 consisted of two satellites (RS-12 and RS-13) attached to and powered by a Russian Navigation satellite COSMOS-2123. They had receivers in the 15 m band and 10 m transmitters. An example contact could be between Scotland and Australia using signals bounced off the ionosphere to the satellite and back the same way. In some cases the satellite did not even have to be in the direct path.

Signals from all over the world were received via RS-12/13. Not bad for a satellite only 1000 km high. Unfortunately for RS-12/13 this was not its only notable solar effect. Around July 2002 it is thought that the satellites were hit by a massive proton flash from the Sun. Attempts to gain control failed and they have remained silent since [3, 4].

In summary, recent years have given excellent solar conditions for satellites. They have degraded less, stayed up longer and given reliable communications. Conditions will change during the next few years as sunspot numbers rise.

References:

[1] http://www.solarstorms.org/Svulnerability.html

[2] CO-56 page: http://lss.mes.titech.ac.jp/ssp/cute1.7/cute1.7-1/projectoverview_e.html

[3] http://www.amsat.org/amsat/sats/n7hpr/rs1213.html

[4] http://www.amsat.org/amsat/archive/amsat-bb/200202/msg00707.html

Six new satellites

During September there were two launches from Russia and India carrying six satellites with transmitters using the amateur bands.

On 17th September a Russian Soyuz-2 launched from Baikonur Cosmodrome in Kazakhstan with seven satellites. The main payload was the Meteor-M weather satellite. Satellites carrying transmitters on amateur bands were SumbandilaSat from South Africa and Tatiana-2 from the Moscow State University.

SumbandilaSat

SumbandilaSat is sponsored by the South African Department of Science and Technology. Its main mission payload is a multi-spectral imager designed to have a resolution of 6.25 m. Images received will be used for monitoring agriculture and land use, water levels in dams and tracking population movement. The experimental amateur radio payload consists of an FM transponder and voice beacon.

SumbandilaSat has a polar orbit with an altitude of 500 km to suit the spectral imager. The mission has a designed lifespan of three years. With such a low orbit, it may not last more than five years. Much of this will depend on solar activity (see above). The satellite is 3-axis stabilised to give precise pointing for the imager.

The amateur payload will be turned on after commissioning. It consists of a V/U FM voice transponder, a parrot mode repeater and a digitalker voice beacon. The modes are controlled using CTCSS tones (details of which have not been published at this time). The uplink frequency is 145.880 MHz, the downlink is 435.350 MHz. The operation will be as follows:

If a certain control tone is received, the satellite will turn on the transponder. A different control tone will turn on parrot mode. It will record 20 seconds of audio received on the 2 m uplink and replay this message on the 70 cm downlink. If no tones are received for a period of time then it will automatically revert to the voice beacon. The beacon will contain a 15 second message that is programmed from the ground station. A copy of the message can be heard from the AMSAT-SA website [5].

SumbandilaSat was originally planned to be launched from a Russian submarine around January 2007. This and other launch opportunities did not happen and there was some concern that it would not fly at all. Fortunately they were able to get it on-board a Russian Soyuz flight. This launch was also delayed by two days due to bad weather and a technical problem.

The other experimental payloads consist of a vibrating string experiment, a Very Low Frequency (VLF) receiver, an architectural radiation experiment for commercial off the shelf devices and a software defined radio (which is shared by the amateur radio payload). The vibrating string experiment will examine the characteristics of a vibrating string in microgravity. The results will be compared with overhead electricity and telecommunications cables. The VLF receiver will look at propagation of VLF signals through the ionosphere.

[5] http://www.amsatsa.org.za/SumbandilaSat.htm

Tatiana-2

The second satellite from the launch is Tatiana-2 from the Moscow State University. Its mission is to look at light phenomena in the Earth's atmosphere due to cosmic rays and high energy particles. It will also investigate the Earth's gravitational and magnetic fields. The science telemetry will be transmitted around 1700 MHz. There is a CW beacon on 435.265 MHz using a similar format to other RS-series satellites. Strangely, this one signs itself as RS-28 but it is otherwise known as RS-38.

On 24th September, the Indian Space Research Organisation launched the 960 kg remote sensing satellite OceanSat-2 and four Cubesats into a 720 km polar orbit. These Cubesats all contain transmitters in the 70 cm band.

Swisscube

This Cubesat is the first satellite from Switzerland. Designed and built at the Ecole Polytechnique Federale de Lausanne, its mission is to use a 50 mm long telescope to image airglow in Earth's upper atmosphere. The light is measured at a wavelength of 767 nm +/- 10 nm (infra-red) and is caused by molecules of oxygen re-combining at night at an altitude of 100 km. These molecules were split by sunlight during the day. It is expected to download one image per week.

Transmissions from Swisscube are on 437.505 MHz. A 120 mW, 14 word per minute CW beacon transmits worldwide. 1200 baud FSK science and engineering data is turned on when in range of control stations in Switzerland. I have heard the CW signal and it sounds distorted.

The website for Swisscube is very informative and well presented. It has an amateur radio operator area so that you can download a CW telemetry decoding program.

The Swisscube website is at http://swisscube.epfl.ch/

BEESat

BEESat was constructed at the Berlin Institute of Technology. Its mission is to use coin sized micro reaction wheels to accurately orientate its position in space. Using a camera, magnetometers and sunsensors to provide feedback for the reaction wheels makes BEESat a complex system in a small cube. There is a CW beacon and high speed telemetry on 436.000 MHz. Despite a few attempts, I have been unable to hear either transmission.

More details can be found at http://server02.fb12.tu-berlin.de/rft/beesat/BeeSat/About_BeeSat.html

UWE-2

UWE-2 is a Cubesat developed by the University of Wurzburg in Germany. Like BEESat it will demonstrate methods of position control. It has a 1200 baud AFSK downlink on 437.385 MHz (same frequency and mode as SEEDS II/ CO-66). It does not have a CW beacon. The university is interested in any telemetry received from amateur operators. Also like BEESat, I have not heard any packets from this Cubesat yet. More details can be found at http://www7.informatik.uni-wuerzburg.de/forschung/space_exploration/projekte/cubesat/uwe-2/get_involved/

ITUpSAT-1

In contrast to Swisscube, not much has been published about the Turkish Cubesat ITUpSAT-1. Constructed by students at the Istanbul Technical University, ITUpSAT-1 has a low resolution camera and other sensors. It has a CW beacon transmitting on 437.325 MHz. I have heard this CW signal and it has a poor tone quality, but is readable.

The website is at http://usl.itu.edu.tr/index.html

Updates

POLLOX, one of the satellites launched from the Space Shuttle during July, has gone silent. Its batteries went flat around 12th September. This will not affect its primary mission as a moving reflector for laser beams (to determine its height and from that atmospheric density).

Detailed drawings of ARISSat-1 (previously known as SuitSat-2) have been published. In nine weeks the team has constructed a box structure from scratch. The main structure (not including antennas) is now a box shape with the dimensions of approximately 50x50x27 cm. One bonus of the new structure is that the solar panels will be mounted on each of the six sides to give a better distribution than was possible with the spacesuit. These drawings can be seen at http://71.43.22.149/

Final Pass

With SumbandilaSat's 500 km altitude, it will not be up for very long. Hopefully by the time you read this article it will have been commissioned and we will have a third FM transponder in operation. Enjoy it before those sunspots come.

ar

Silent Key David Couch VK6WT (RSARS 1793)

All RSARS and WIA members will be saddened to hear of the passing of David Couch VK6WT on 7 October 2009, at the age of 92 years, and after a short illness.

Born in Fairfield, Victoria in 1917, David was licensed as VK6WT in February 1946, after obtaining his certificate of proficiency in 1944 whilst serving in the Australian Army during the late years of World War 2. During his army service, David was involved with the installation and operation of early microwave army No.10 set radio links. David was an accomplished marksman with a .303 SMLE rifle and was proud to show his achievement certificate to visiting friends. In addition, he had one of those prized certificates given to those who had served their country in times of need.

He was originally a member of the Victorian division of the WIA, but became WIA Western Australian Division member number 6 in May 1949. Subsequently, David was appointed as a Life Member of WIA in July 1988 for his services to amateur radio in Western Australia. Strangely enough, his callsign was originally held by the Wireless Institute of Australia Perth Aero Section in the early 1930s.

On his return from Army service David moved to Western Australia from Victoria and spent some time employed in a well known radio store, and generally in the radio/electrical industries, before joining the WA Department of Technical and Further Education, as a Lecturer (Electrical Engineering). He was for many years responsible for the Amateur Radio Certificate of Proficiency classes at the Mount Lawley Technical College, and excelled in passing on the basic facts about radio communication to those seeking Amateur Radio licences. David collected hundreds of Morse keys from all over the world and proudly displayed them to all who visited him in his back garden shack. He was an expert CW operator and could always winkle out rare countries, adding to his DXCC, RSARS and FOC lists much to the envy of his mates in Western Australia.

As VK6WT he was always reluctant to confess to his rare excursions on telephony, much preferring CW operation on the DX bands. Many current WA licensees are grateful to David for providing their early introduction to amateur radio, and he will be greatly missed by his many friends. He is survived by his granddaughter and grandson.

Submitted by Ron Vaughan VK6RV and Alan Gibbs VK6PG.

ar

Silent Key

Col Ferguson VK5CJ (RAOTC 305) Mount Gambier

Died 9 June 2009, aged 92.

I first met Col in June 1941 at RAAF Base Pearce, WA. We were in the same Squadron (No. 14). We became friends and visited Perth while on leave. We visited friends of Col (the Bowley family) where I met my wife Val of 65 years.

Col and I were posted to Darwin in December 1941 and went through the first raids. I did not see him again until 1945, when I was on the way to Borneo in 24 Squadron. After discharge, we got back on air and contacted each other on 40 metres (7103 kHz).

Col married Janet in 1946. They had two children – Bruce, now in Canberra, and Colleen Black of Mount Gambier. Janet died in 1978.

On discharge from the Air Force, Col joined Radio 5SE as Engineer, later to become Chief Engineer and Manager.

He had a severe stroke in 2007 and lost his speech.

He was always a happy chap and enjoyed life.

Vale Col.

73, Ray Deane VK5RK **ar**

VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

The first trans-Tasman VHF tropo contact for the season occurred rather unexpectedly for those concerned. On the morning of September 19th, Rex VK7MO in Hobart was operating on the 2 m FSK441 meteor scatter session, beaming towards New Zealand.

Bob ZL3TY in Greymouth, 1950 km away, was hearing Rex's signal continuously rather than in occasional bursts from the meteors. They switched to SSB and exchanged 5x3 reports each way. They then had a JT65A digital contact with signals peaking at a very strong –4 dB. Unfortunately, 70 cm was not operational at Bob's end, so higher bands were not attempted.

VHF/UHF/Microwave DXpedition

Norfolk Island (OC-005) (RG30xx)

3 – 14 January 2010

VK9NA 2010

NORFOLK ISLAND
SOUTH PACIFIC

A team of experienced VK amateurs is heading to Norfolk Island in January to operate bands from 6 metres to 10 GHz. The team from the VK Microwave Group will be Alan VK3XPD, Kevin VK4UH and Michael VK3KH. Preparation and planning is progressing well with accommodation and airfares already booked. As with most remote operations, the airfare cost and arrangement are the most difficult part, particularly as the group plans to take a 1.2 metre dish for all bands from 1296 MHz through to 10 GHz.

A group of VK5 and VK3 operators has organised to travel to Port Macquarie on the NSW coast, with full microwave gear, to take advantage of the opportunity. A number of ZL operators have also indicated their interest in setting up at favourable locations on the NZ North Island.

It is hoped to use 2 metres as the main propagation indicator, and then move up the bands as propagation/conditions permit. The group will have Internet access, and will use the VK Logger (www.vklogger.com) as the main method of liaison. Operation will be SSB, CW and where possible Digital modes for meteor scatter and tropo paths.

Six metres will be part of the operation, and they are hoping for opportunities on the "magic band" in all directions. As this is the main Sporadic E season, anything is possible. They will have HF capabilities, but these will be limited as VHF, UHF and microwaves are the prime focus.

The group is excited about this venture, and hope to receive support from VK and ZL operators to make it worthwhile. Updates will be posted closer to the time. For further information, contact Michael VK3KH at mdc@cranbournemusic.com.au

10 GHz New Digital Record

I am always a bit reluctant to write about things I have been doing, but hopefully this is of general interest too.

Rex VK7MO and I have been attempting to work over increasing distances on 10 GHz. To dig down into the noise, we are using equipment with very high frequency stability allowing the use of the JT65 weak signal digital mode. As a predictor of the signals over a given path, I have been using the excellent RadioMobile software package written by Roger VE2DBE. While this software is intended to analyse VHF/UHF paths, the predictions for 10 GHz have matched our actual results fairly closely.

Our latest attempt was on September 10th from Mt Buninyong near Ballarat to Mt Barrow in northern Tasmania. For that path, RadioMobile predicted a margin of about 6 dB for a digital contact using JT65A. That meant a signal of about –19 in WSJT terms.

I arrived at Mt Buninyong at 11:30 am to meet Ian VK3AXH who was doing some work on the VK3RMB beacon installation (back on air on 70 cm and 23 cm very soon).

The lookout tower has several levels with public access, then above that the fire lookout level and at the top is an equipment room (almost empty) with Perspex windows and a clear view to Melbourne and beyond. This was where we set up, so the gear had to be carted up the steps, up through two hatchways to the top - with Ian doing a good imitation of a packhorse.

Just as we hoisted the last bit of equipment up, the mobile rang with Rex VK7MO reporting he was all set on Mt Barrow. Joe VK7JG was assisting him. Soon after, Ian VK3YCQ joined us, struggling up the hill in his slightly sick 3-cylinder Anglia.

We were set up and all running by about 12:40 and immediately Rex's JT65 "bagpipes" were audible - just. By 12:45 we had exchanged reports and set a new 10 GHz Digital record of 510.5 km. The reports were -14 and -17 that, in JT terms, is probably about S2 and was slightly better than RadioMobile had predicted.

We then continued to transmit to each other to see what the path would do. At about 13:00, signals had risen significantly to -6, which is getting towards voice contact level. Rex switched to SSB and we struggled through an SSB contact (4x1 / 3x1) with lots of rapid QSB.

However, signals were still on the rise, and Joe and I then exchanged 5x1 reports easily. We continued to chat with signals at one stage getting to 5x7 / 5x9! We seemed to be getting very strong QSB over a several-minute cycle, together with the rapid 2-second QSB noted earlier.

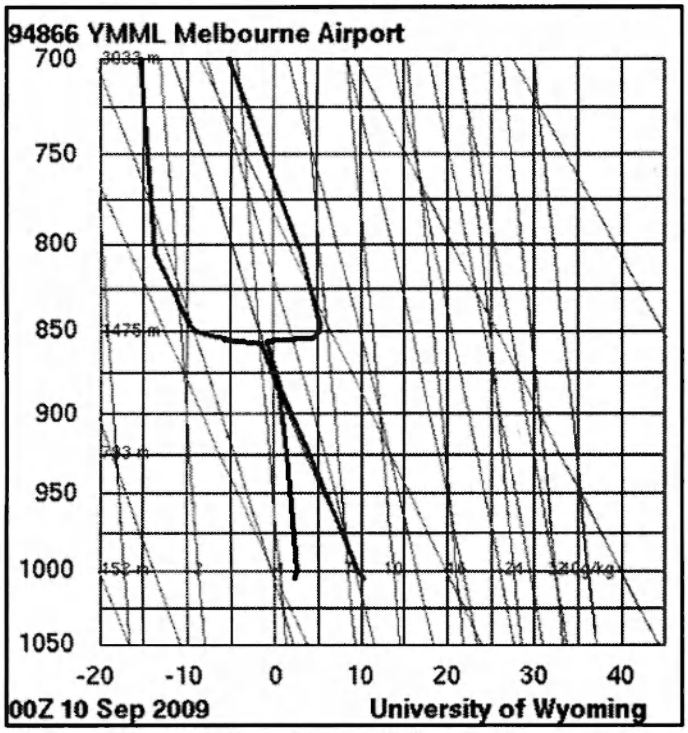
I switched to transmitting a carrier, and Rex observed the results on Spectrum Lab. Unfortunately, my GPSDO internal batteries had come adrift, so when I had unplugged it from the car, it died completely. So, it was still settling down again (after being powered up again when we reached the top of the tower) causing a 30-sec cyclic 3 Hz wobble in my carrier. Switching to "hold" fixed that, although slightly off frequency.

I then worked Alan VK3XPD (5x9 / 5x7) in Melbourne, although the dish was pointing through the wooden window frame. Unfortunately Alan did not succeed with Rex, possibly due to obstruction of his dish in that direction.

Signals to Rex continued to vary up and down with some quite strong periods until we packed up just after 15:00.

Later, Joe VK7JG back in Launceston observed that the Geelong 2 m beacon

was 5x7 so it appears that we had some good conditions come across as we were operating. This seems to be confirmed by the radiosonde temperature trace from 0000 Z at Melbourne Airport. This shows around 5 degree inversion at 1450 metres which is just high enough given that Rex was at 1286 metres on Mt Barrow.



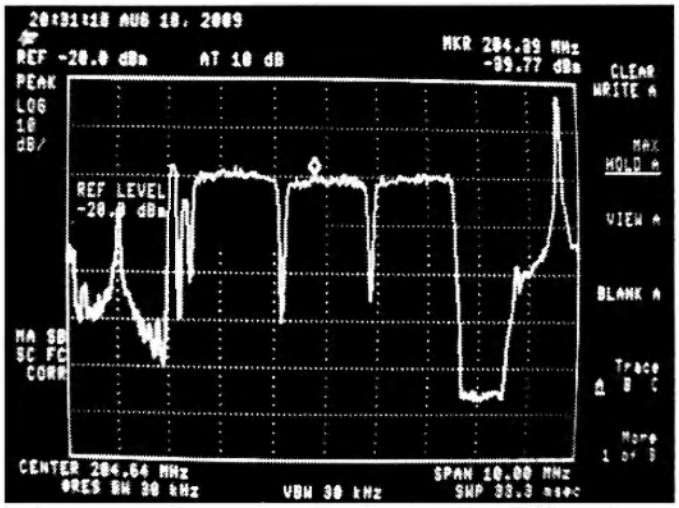
Radiosonde readings at Melbourne Airport

Thanks to Ian VK3AXH for providing access to the tower and for carting the gear and to Ian VK3YCQ for his assistance.

And thanks to Rex VK7MO and Joe VK7JG for being at the other end!

New Interference Possibility

No doubt you have all heard of the new DAB+ digital radio system recently introduced in major capital cities. Apart from the strong possibility of it becoming a white elephant, it also introduces a new interference potential for certain VHF transverter configurations.



Spectrum analyser screen showing the strong DAB carriers causing problems for VK4KZR

Rod VK4KZR runs a fairly standard transverter setup on 2 m, converting from 144 MHz down to 28 MHz where an HF rig performs the IF duties. Recently, he noticed a sudden and drastic increase in noise level on the 2 m band making operation almost impossible. With some sleuthing, he traced the cause to the new DAB+ transmitters that are putting a whopping signal into his QTH. With a Spectrum Analyser connected to the antenna, he recorded the following:

The three broadband signals are the 3 DAB+ carrier channels shared by the many radio stations. They are about –40 dBm, a big signal.

Rod eventually figured out what was happening. The second harmonic of his 116 MHz LO at 232 MHz was mixing with the DAB+ signal at around 204 MHz to produce the 28 MHz interference. His solution was to make up a filter to block out the DAB+ signal.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Band conditions continued to be quiet during September with only a couple of minor 'E' openings. Main activity has been the morning scatter contacts and Brad VK2QO reports the following:

There are a lot of operators working scatter now and more and more showing an interest on the weekends with ZL and VK6 watching the logger as well. At the moment interest is high on the east coast being more VK4s and VK7s then 1s, 2s and 3s. On the weekends there can be up to 15 operators on in the mornings taking part or just watching and listening. Also many are now taking an interest in the digital modes in the evening on 50.230.

Here are a few September reports:

From Scott VK4CZ:

4th at 2023 Z Brad VK2QO 519, 5th at 2149 Z Gerry VK2APG 5/5, 18th at 1930 Z Darrell VK2BLS 519, at 1954 Z Brad VK2QO 519.

From Phil VK4FIL:

10th Gerry VK2APG with FSK441, 14th Darrell VK2BLS (JT6M), 15th Gerry VK2APG (JT6M), 22nd David VK3AUU 5/4 SSB.

From Glenn VK7AB: 9th Peter VK5PJ 5/3.

From Brian VK4EK: too many to report - worked Dave VK1DJA, Gerry VK2APG, Darrell VK2BLS, Brad VK2QO, Trevor VK3VG, Ron VK4CRO and Phil VK4FIL with signals ranging between 5/1 to 5/6 in SSB, CW and digital.

From Brian VK5BC: 3rd Kevin VK3WN and Joe VK7JG both SSB, 4th Joe VK7JG SSB.

October is looking better with John VK7XX and Joe VK7JG joining in the fun weekdays.

Early morning on the 1st September, Brian VK4EK in Sapphire completed several 'E' contacts with VK1, 2 and 3 duringp a 30 minute opening and on the 9th Brian reported the Barossa beacon VK5RBV and worked Brian VK5BC 5/9. On the 20th David VK4ZDP Innisfail worked MikeVK2ZQ, Brad VK2QO and Darrel VK2BLS with signals up to 5/9 and the VK2's reported hearing the Atherton VK4RHT beacon on 50.281 MHz.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com .

ar

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The Ozi-Wire 3.5 MHz to 55 MHz, no resistor, broad band emergency or backup antenna kit (Ozi-Wire BBA Kit) $99.00 plus $5.70 postage to VK.

The Ozi-Data Interface, a radio data interface kit for PSK31, SSTV, and others, $50.00 plus $5.50 postage to VK.

Contact the Mid North Coast Amateur Radio Group Inc, Box 505, Bellingen. NSW. 2454, or http://www/mncarg.org/ or mncarg@yahoo.com.au

WANTED - NSW

Mini-Scamp microcomputer hardware as described in 'Electronics Australia' in about 1977. Several units required for an educational project. Prefer complete units in reasonable condition but incomplete units and parts would also be useful.

Contact Bruce Carroll VK2DEQ at Unit 9, 55 Merimbula Drive, Merimbula. NSW. 2548, or email bpcarroll@hotmail.com or phone 0428 638 023.

FOR SALE – VIC

Toshiba 2520CD satellite laptop computer, with powerpack and batteries. Installed programs include Word, Publisher, Dreamweaver 4, Notebook, myobaccount, MSproject, Windows Media. Fast internet Ethernet card. Excellent performer, immaculate condition. $100.

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Stan VK3BNJ 03 9743 6708.

FOR SALE - QLD

Hammarlund Super Pro Receiver. Bands 540 -1160 kHz, 1160 – 2500 kHz, 2.5 - 5.0 MHz, 5.0 -10.0 MHz, 10.0 - 20.0 MHz.

Condition unknown, as I have never turned it on. The audio section has been modified. I do not have its original PSU, however I will include a PSU which should be able to power it. Included also is an original manual, although not the same model. The manual is for the Super Pro but covers different bands including the AM broadcast band.

Condition is what you might expect for a 1940's military radio receiver. Prefer pickup from Brisbane. $50.00.

Malcolm VK4ZMM QTHR. Email any questions to vk4zmm@bigpond.net.au or 07 3298 5454

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Bruce VK5ZJE Phone 08 8382 1563.

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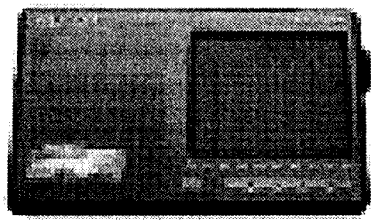
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We are looking for writers of articles suitable for this website.

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Tim Roberts VK4YEH QTHR.

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VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 439.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15. Tuesday 2100 local VK7RMD NW 146.625.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.337, 145.900 (DARC VK8DA). Sunday 0900 and 2000 local 145.900 IRLP 6800 Katherine (Mike VK8MA). Sunday 1000 local 439.150 Katherine (Steve VK8SJ)

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

Photographs from VK3PC's JARL adventure photo album



Hiromu Okada JA3CKF wind powered station.

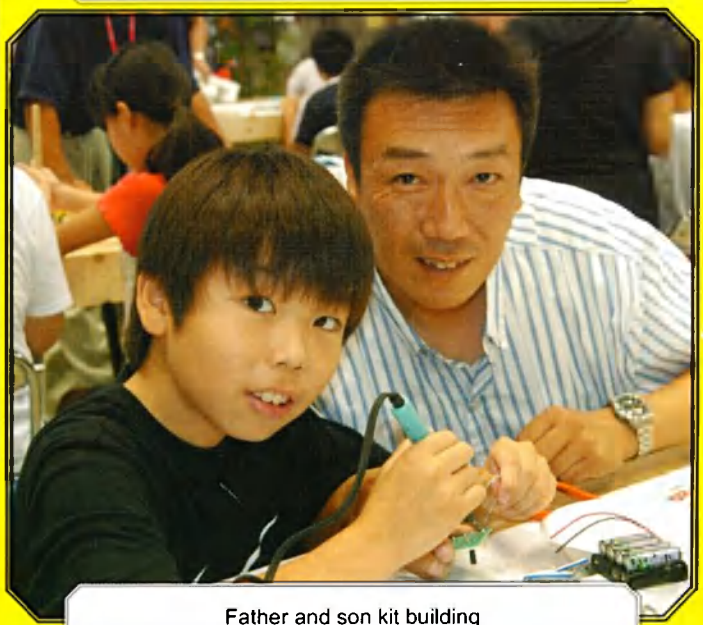
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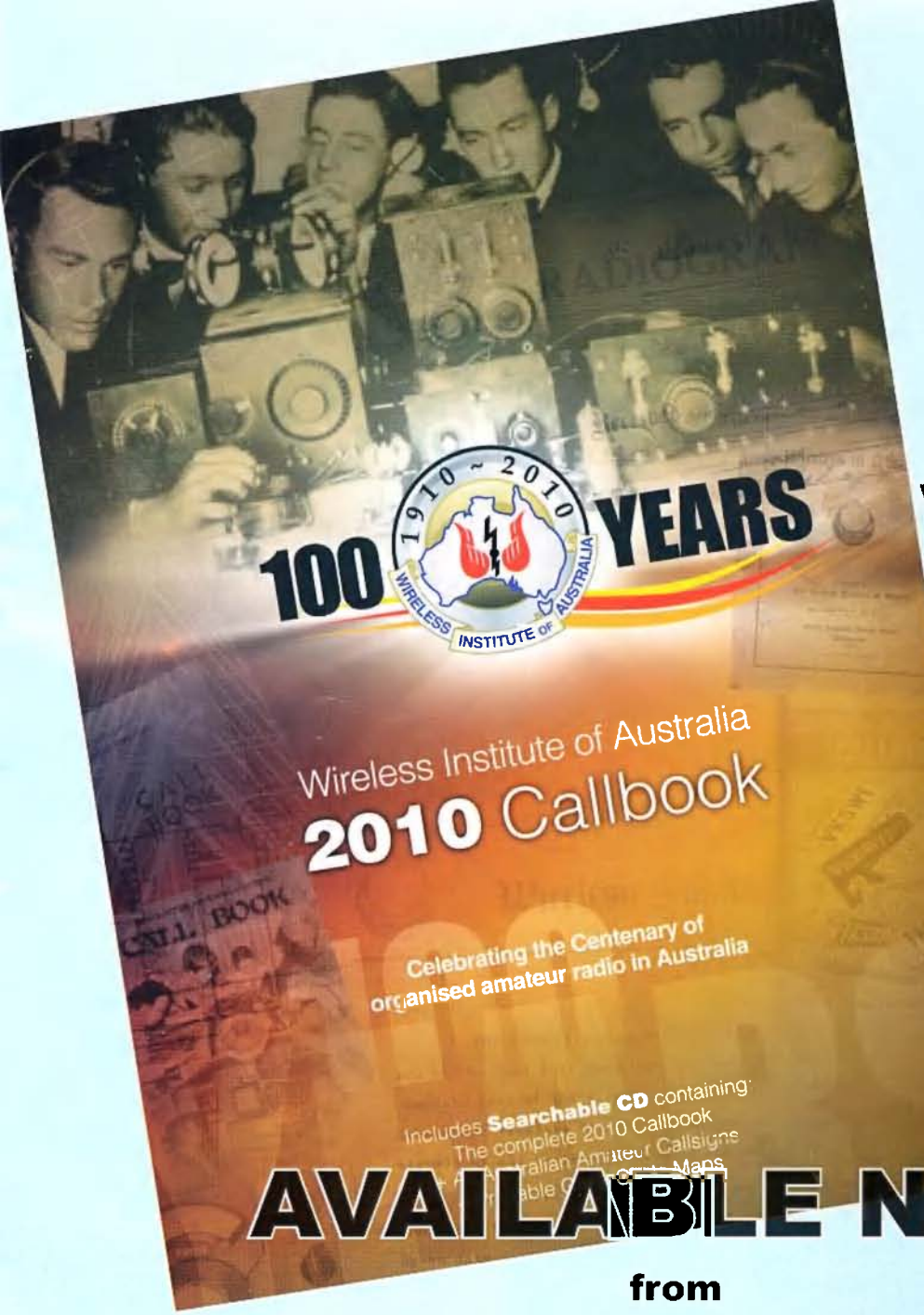


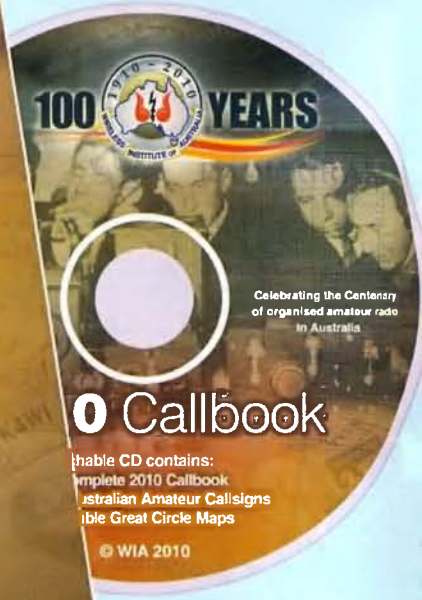
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General articles, columns and advertising booking 5th day of previous month.
Hamads and advertising material 15th day of previous month

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Our cover this month

So simple it's a world beater. Our Foundation Corner contributor Ross Pittard outlines some simple test equipment. Shown is the VK5JST Antenna Analyser, hundreds of which are sold in kit form around the world by SCARC.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from the Editor.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

If back issues are unavailable, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's oldest National Radio Society, founded 1910.

Representing

The Australian Amateur Radio Service

Member of the International Amateur Radio Union

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Editorial

Peter Freeman VK3PF

Another year (almost) gone

December is here again – is it just me or does everything seem to be more hectic?

Time to start thinking about reviewing the "to do" list and prioritise the tasks. High on my list must be to build a Yagi antenna for the six metre band. The current vertical just does not cut the mustard! There are plenty of other amateur radio tasks as well – I seem to have gone backwards this year.

And of course we have a big year ahead, with the celebrations of the centenary of organised amateur radio in Australia.

Please do remember to write up the events in which you are involved, and take lots of photographs at as high a resolution as you can manage. Then send in the material to both this magazine and to the Centenary Committee – we will publish the best material in the magazine and you can add to the future history of the WIA.

Some brief words about photographs

Over the coming weeks, I intend to update the *Guide to Authors* material that is available for download on the magazine section of the WIA website.

For now, let me simply make a plea to anyone taking digital photographs that might end up being submitted for publication:

Please set your camera to take and store photos at the highest possible resolution!

We often receive images that are very small – any file (even a jpg format image) that is less than about 100 kB in size is unlikely to be usable for the magazine. We would much prefer to have photos that are at least 500 kB in size, and bigger if you think that it might be worthy of consideration for the cover or inside cover pages.

You may need to download the images more often from the camera to the PC, and to also save the files (with modified names) to smaller versions to share with friends and family via email, but for reproduction in the magazine, we really do prefer the images as big as we can get! If need be, send us a smaller version of the file initially, but please tell us that a higher resolution version is available.

I can then contact you for the higher resolution file if needed. For most articles, we can wait for a CD to arrive via mail. If we need something urgently, there are other mechanisms available to transfer the file/s.

Please do think about the composition of the photograph before you hit the shutter button. Also think about the lighting. If the subject's face is in shadow because of a strong light source coming from behind, activate your flash to in-fill the face. A better image should result.

Articles

Please continue to put fingers to keyboard (or pen to paper) and write articles for *Amateur Radio*. We currently have a reasonable stock of technical articles varying from simple to complex projects. We thank all who have contributed over the past year. Keep up the good work everyone.

We currently have few general articles ready for publication – I am sure that can change if you think about reporting on events locally. Some brief material may end up placed in the "News From" section of the magazine, but others may make it as feature articles.

Club advertising

One item that requires updating is the provision regarding the placement of Club advertising in *Amateur Radio*. We are attempting to rationalise our processes, thereby ensuring that it is harder for us to miss a Club advertisement.

Part of this process will be the establishment of a single registration point for advertising books and content. We can then be sure that we have all the required details; including billing details if the advertising needs us to charge the Club.

Club Secretaries can expect to receive advice of the changes once they have been confirmed. Once finalised, the policy document will also be placed on the *Amateur Radio* section of the WIA web site.

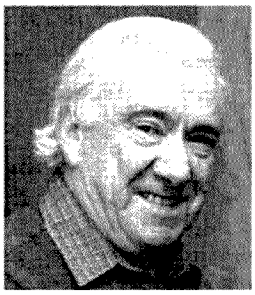
Season's Greetings

I trust that all readers have a safe and enjoyable festive season. Enjoy the celebrations (in moderation of course) and make some time to be on air. It looks like we are finally seeing some new cycle sunspots, so hopefully ionospheric propagation will be picking up!

As is our usual pattern, the next issue will be out in late January – a combined January/February issue.

Cheers, Peter VK3PF **ar**

WIA comment



Michael Owen
VK3KI

Contributing to the Community

In the News page in this issue of Amateur Radio we report on yet another successful ARISS contact with a Victorian school.

ARISS (Amateur Radio on the International Space Station) started as SAREX, the Space Amateur Radio Experiment, and is a program sponsored by the National Aeronautics and Space Administration (NASA), the American Radio Relay League (ARRL) and the Radio Amateur Satellite Corporation (AMSAT).

Through amateur radio the astronauts on the ISS have been able to speak to children from over 500 schools all around the world, answering their questions.

Industry has complained of the shortage of radio technicians. In the past, young people developed an interest in radio, and then followed that by taking up a career in radio. We all know amateurs who have worked in radio and who followed that path.

In today's world many things compete for the interest of us all. It was one of the arguments advanced in favour of the Foundation licence that an easily achievable qualification and a licence that was sufficiently attractive would be a means to spark an interest in radio, and some of those who sought a Foundation licence would do so at an age before career decisions had to be made.

ARISS is a volunteer program started in 2000 by a group of radio amateurs to provide the amateur radio links for the students to speak to the crews on the International Space Station. The object of the program is to inspire students, worldwide, to pursue careers in science, technology, engineering and mathematics through amateur radio communications opportunities with the International Space Station on-orbit crew.

Students learn about life on board the ISS and explore Earth from space through science and mathematics activities. ARISS provides opportunities for the school community (students, teachers, families and local residents) to become more aware of the substantial benefits of human spaceflight and the exploration and discovery that occur on spaceflight journeys along with learning about technology and amateur radio.

Tony Hutchison VK5ZAI sat for his amateur licence in 1960, and developed an interest in amateur satellites. His first educational link up was with the Mir Space Station in 1993 when students from Loxton High School spoke with Cosmonaut Alex Serabrov. Since 2000 he has been one of the small group of volunteers with the ARISS program, and one of the nine approved amateur earth stations for the program.

Tony has been responsible for setting up ARISS contacts with over 30 schools in Australia, using either direct communication with the ISS or a telebridge, where a remote amateur station makes the contact with the ISS and is connected by telephone lines to the school. He has also worked with NZART to introduce the ARISS program to New Zealand schools.

Tony Hutchison VK5ZAI was one of the four South Australian Senior Australian of the Year finalists

The Australian of the Year Awards is a program of the National Australia Day Council.

The Council describes the awards as follows: "Each year our nation celebrates the achievement and contribution of eminent Australians through the Australian of the Year Awards by profiling leading citizens who are role models for us all. They inspire us through their achievements and challenge us to make our own contribution to creating a better Australia.

The Australian of the Year Awards provides all Australians with the opportunity to recognise someone who makes them proud.

The Awards operates at two levels - state/territory and national. State and territory selection committees select four finalists for each award category, with one of these finalists becoming the state/territory award recipient. State/territory award recipients then become the national finalists for the awards."

The awards are in four categories, the Australian of the year, the Senior Australian of the Year, the Young Australian of the Year and Australia's Local Hero.

The state and territory Senior Australians of the Year finalists were announced on 9 November 2009, and included cook and restaurateur Maggie Beer (SA), crime victims' advocate Ken Marslew (NSW), historian Prof Geoffrey Blainey AC (VIC) and singer/songwriter Kev Carmody (QLD).

Tony Hutchison VK5ZAI was one of the four South Australian Senior Australian of the Year finalists, recognising his work as one of the nine approved Satellite Earth Stations for the Amateur Radio on the International Space Station (ARISS) program and as Australian ARISS Coordinator.

The South Australian awards were presented and the national finalists announced at a ceremony at the National Wine Centre in Adelaide on 11th November 2009, in the presence of the Governor of South Australia, Rear Admiral Kevin Scarce.

We can be proud that Tony's work has been recognised in such an important way.

We should also reflect that our interest, amateur radio, can itself contribute something of value to our society. Very often we tend to think of that contribution in terms of emergency communication only. But the contribution of amateur radio to our community can be much wider.

Tony has demonstrated that very well. **ar**

WIA News

Robert Broomhead to resign as a WIA Director

The WIA Board has accepted with regret the resignation of Robert Broomhead VK3KRB/VK3DN as Director of the WIA with effect from 31 December 2009.

Robert, who has served as Director of the WIA since 8 November 2004, advised the Board that he wished to resign after a five year commitment.

Commenting on Robert's resignation, WIA President Michael Owen VK3KI said "Robert has made a great contribution to the WIA, being responsible for the "corporate look" that has been adopted by the WIA, the IT side of our activities and is responsible for the incredibly successful Annual Meeting weekends that have become such a feature of the WIA. We are grateful that he will continue to assist the Centenary Committee, and, of course, we have accepted his offer to continue as Webmaster for the WIA website. The Directors cannot adequately express their gratitude for all that Robert has done."

It falls to the WIA Board to appoint a Director for the balance of Robert's term, which ends at the AGM in 2011.

Queensland Clubs Meet

The Queensland Advisory Committee under Chairman Don Wilschefski VK4BY organised a luncheon meeting of Queensland clubs at the Geebung-Zillmere RSL club near Brisbane on Sunday 15 November 2009.

Representatives of some 14 clubs participated, from as far away as Townsville and Rockhampton.

WIA President Michael Owen VK3KI presented a report on WIA activities.

His wide ranging report covered the representation role of the WIA both nationally and internationally, the growing importance of the regional telecommunications organisations in the processes associated with the ITU's WRCs and the problems this presented for the WIA, the work now undertaken by the WIA on behalf of ACMA, the centenary celebrations and the role of the clubs next year, emergency communications and the financial pressures facing the WIA and the need for the clubs to encourage WIA membership.

WIA Vice President Ewan McLeod VK4ERM lead a discussion on possible activities to attract new people to amateur radio and Peter Schrader of Emergency Communications in south east Queensland described the provision of emergency communications in the emergency management structure in Queensland.

Graham Kemp VK4BB talked of the WIA broadcasts and demonstrated VK1WIA being transmitted on digital radio.

This was the second successful major WIA meeting of clubs this year, the previous meeting being in Adelaide last September, attended by WIA Director Robert Broomhead VK3DN and President Michael Owen.

Amateur is SA Senior Australian of the Year finalist

The Australian of the Year Awards is a program of the National Australia Day Council, with state and territory selection committees selecting four finalists in each category, including the Senior Australian of the Year.

The awards recognise the individual's contribution to their community.

The South Australian Committee selected an amateur, Tony Hutchison VK5ZAI as one of the four South Australia finalists in the senior category for his work as one of the nine approved Satellite Earth Stations for the Amateur Radio on the International Space Station (ARISS) program and as Australian ARISS Coordinator organising the link ups for schools to contact the amateurs on the International Space Station, stimulating the interest of young people in science and technology.

The finalists were announced at an impressive ceremony at the National Wine Centre in Adelaide attended by the Governor of South Australia and the Deputy Premier of South Australia. WIA President Michael Owen VK3KI was present as a guest of Tony.

While Maggie Beer of television fame went on as a national finalist, the recognition of the contribution of amateur radio and of Tony to the community has delighted the WIA Board.

2010 WIA Centenary Callbook

The WIA website reported that stocks of the much awaited 2010 WIA Centenary Callbook were due to arrive at the WIA office by 30th of November.

Orders can be placed from the Callbook page in the WIA online bookshop.

WIA affiliated clubs may also purchase callbooks in bulk for sale at club meetings, hamfests etc. Any WIA affiliated club can purchase a full box of callbooks free of delivery charges. Full details of the offer were emailed to clubs and the downloadable order form is available via the WIA affiliated clubs section of the website.

Three schools in a single ARISS contact

A small school at Sassafras about 40 km east of Melbourne is the latest to have an amateur radio contact with a crew member on the International Space Station (ISS) and in doing so achieved a notable first for this activity.

A total of 11 students from Sherbrooke Community School put questions to Astronaut Robert Thirsk, but in a spirit of friendship shared their experience with two other schools. The ARISS contact on Wednesday 28 October also included questions from Sherbrooke's sister schools - the Jiaolun Middle School in China and the Early Learning Centre at Thimphu in Bhutan.

Seven of the Sherbrooke students involved are radio amateurs, each holding an Australian Foundation licence (Christopher VK3FLAT, Emma VK3FERP, Sam VK3FSAM, James VK3FJAM, Oscar VK3FOSC, Callum VK3FSDP and Monique VK3FWPZ). They used their personal callsigns during the contact and will qualify for a personal QSL card when the crew returns to earth.

ARISS Coordinator, Tony Hutchison VK5ZAI who helped facilitate the contact, said the involvement of students who have their own amateur licence in the ARISS program is rare. It previously occurred in 2002 when girls at the Harrogate Ladies College in the UK had their ARISS contact.

VK100WIA callsign roster update

As this issue of Amateur Radio is put together, only 12 of the three day slots remain for clubs to register to use the special callsign VK100WIA to celebrate the Centenary of Organised Amateur Radio in Australia next year.

Registration details can be seen under the Centenary section of the WIA website.

The special issue call sign will be used by the WIA itself in May and shared amongst the WIA's affiliated radio clubs until the end of October.

ar

Twin channel remote control relays with PIN protection

Horrie Davis VK2LY

This is an updated version of a PIN protected circuit which has operated faultlessly for over 15 years, controlling QTH locks and lighting.

With the decoder DIL switches set to any of 10000 positions and with the audio in socket connected to the home base stations speaker, on a pre selected frequency, this circuit offers a reasonably secure method of remote control.

To actuate relay A, transmit * which zeros the counter, resets the flip flops and starts a five second timer, during which time A and the four digit PIN is sent. Relay A will be actuated. To switch off, transmit * then A then the four digit PIN code then Relay A will switch off. To actuate relay B substitute B for A.

For clarity, only one half of each of the output flip flops is used. The floating inputs of idle sections are taken to ground.

The DTMF audio signal is taken to input of the 145436 decoder. The output of which is in binary 1.2.4.8. format. This is then fed to the 4514 to give 15 separate outputs. Numerals 1 to 10 are taken to 4 sets of 10 position dual in line (DIL) preset switches set to match the incoming PIN code. The 4514 pin 19 is the * signal and 4514 pin 14 is the # signal. The 4514 pin 13 is letter A and 4514 pin 16 letter B output.

Relay A turn on

The output from 145436 pin 12 which goes high on receipt of a VALID DTMF signal is used to clock around the 4017 to provide a 1 to 4 sequential high to the top 4 sections of the 4073s. When * is received (4514 pin 19), it resets the 4017 VALID digit counter, all flip flops and, by turning on the BC547, brings the high on 555 pin 2 to ground causing the 555 pin 3 to go high and distribute 5 volt around various circuits for a preset 5 seconds.

When A is decoded (4514 pin 13) the top 4081 AND gate turns on, setting the top flip flop. Its Q output is taken to the second 4081 pin 5. NB: As A is the first VALID count, the first digit of the PIN code is really the second VALID count. (actually * is the first VALID signal, but as it is self cancelling it does not clock the 4017 counter)

The 4 digit P.I.N. code is then taken thru the preselected settings of the DIL switches, the outputs of which are taken in turn, from the top, to the first 4 4073s.

As each DTMF number is activated the VALID signal from the 145436 clocks the 4017 round another step, putting a sequential high on each of the 4073s in turn. With the output of the 555 on the third legs of all the 4073s for 5 seconds, each of the 4043C flip flops sets to ON in turn. With all the input gates of the bottom 2 4073 AND gates high, the output pin 10 is high.

This high is taken to 4081A pin 6 and 4081B pin 6 (as there is no voltage on 4081B pin 5, this circuit remains inert). As pin 5 is already high, pin 4 sets the 4043A flip flop thru pin 12 taking the output high, turning on the top BC547 energising the relay and also resetting the top section of 4043A.

Relay A turn off

Everything that has been explained to turn the relay on is repeated, the only subtle difference being, as the bottom section of the 4043A is already on, there is no spike from the turn on function to turn off.the top section of the 4043A thru reset pin 7, so the output remains high and that high is taken to pin 1 of the 4081A. When # is received at pin 2 the AND gate conducts, sending pin 3 high, resetting the bottom half of 4043A, turning the relay off.

The operation of relay B is exactly the same, just substitute B for A in the description. Using the clocked 4017 sequence, relays can be turned on or off in any order but they cannot be accidentally switched together. Any random DTMF signal which may have entered the system during standby causing something to clock or set is eliminated by first sending the reset signal *. Limiting the 555 conduction time to five seconds reduces the possibility of bogus signals causing circuit malfunction.

Circuit Diagram on next page

The Wireless Institute of Australia ACN 004 920 745

Election of Directors Call for Nominations

Pursuant to clause 14.1 (c) of the Constitution, the WIA Board has determined that the election of directors shall be conducted by postal ballot.

Three directors retire at the conclusion of the next Annual General Meeting which will be held at a time and a place to be announced but not later than 31 May 2010, namely Philip John Wait, Ronald William Ernest Bertrand and Robert Stanley Bristow. Each is eligible for re-election and Philip John Wait and Robert Stanley Bristow have offered themselves for re-election to two of the three vacancies.

Nominations are called for from others also seeking election as a director of the WIA.

A director must be a voting member of the WIA and must hold an Australian amateur radio licence.

Any person wishing to nominate as a candidate for election as director of the WIA must deliver or cause to be delivered to the Returning Officer by not later than 31 January 2010:

A statement signed by the candidate signifying his or her willingness to be a candidate for election as a director together with; the full name, age, occupation and callsign of the candidate, and such other biographical details or other information as the candidate wishes to accompany the ballot papers, but in all not exceeding 250 words.

Delivery to the Returning Officer may be made by hand when the WIA national office is open at:

Unit 20, 11-13 Havelock Road
Bayswater Victoria 3153

or by mail to:

PO Box 2042 Bayswater VIC 3153.

Nominations received by facsimile or by electronic means cannot be accepted.

Chris Chapman VK3QB returning officer.

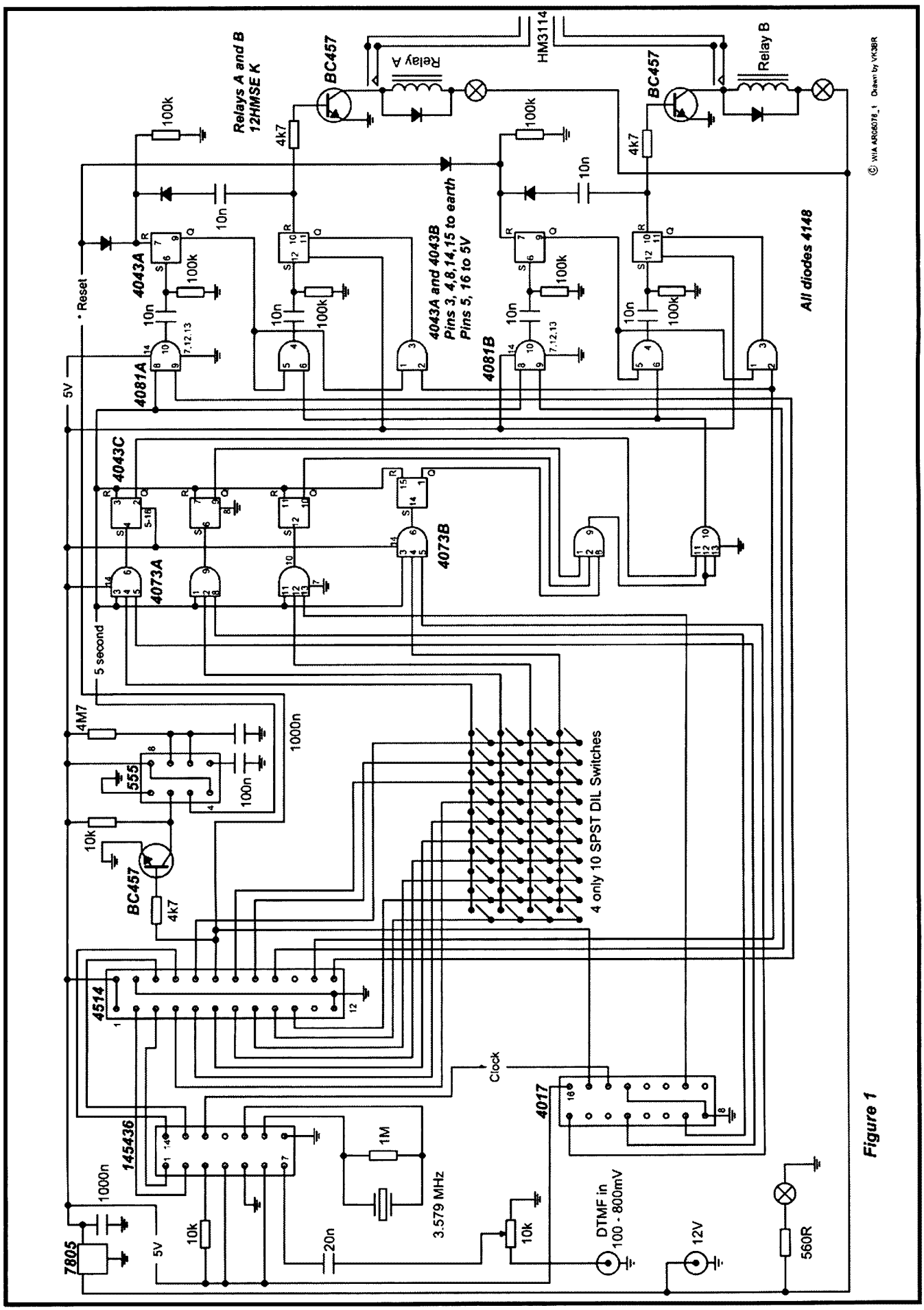


Figure 1

Circuit diagram for twin channel remote control relays with PIN protection

Paddy-board construction SMT style

Peter Whellum VK5ZPG

If you are into home-brewing and finding that many leaded components are becoming scarce or no longer available, or you'd simply like to try something new, this article may make it easier for you to start using Surface Mount Technology (SMT) components.

Introduction:

When first licensed back in 1970, most of my amateur radio equipment was home built – more out of financial necessity due to raising a young family, but also because I had been building electronic equipment since I was a kid. As my finances improved, and after I had moved back closer to civilisation from my outback postings, I again became interested in home-brewing.

My early years saw much of my equipment based on valves with point-to-point and tag-strip wiring techniques used. In the late 1960s I started to build equipment using discreet solid state devices, with home-brew etching of basic printed circuit boards (PCBs) – using contact type plastic sheets, a sharp pocket knife or scalpel and, shudder, nitric acid.... cough, splutter, goodbye lungs!

After I retired, and later moved to Quorn in 2002, the home-brewing bug struck with a vengeance, a situation not helped by Drew Diamond VK3XU, and his very popular *Radio Projects for the Amateur*, volumes 1 to 4. My first project was to build a modified version of Drew's *TCF-80*, a CW/SSB 4 W transceiver operating on 80 metres.

This was also my introduction into paddy-board (or Manhattan) construction, a system I find to be intuitive, fast and accurate (*Reference 1*). I had previously used the 'dead bug' style of construction, using flattened (and emptied!) jam or baked beans tins as a solderable base for bread-boarding projects, some time before I ever used PCB for the same purpose.

Trying to keep up with modern technology has seen my interest grow into using Surface Mount Devices (SMDs) and I found myself stocking up on various components, mainly of the larger 1206 type, a concession to my fading eyesight and seemingly ever-increasing slight hand tremors. I have found, however, that the traditional paddy-board style of construction, using small off-cuts of PCB for component 'lands' or 'tracks' was not particularly usable with SMDs.

I had more or less resigned myself to the fact that the best way to deal with SMDs was to etch purpose designed boards, all very time-consuming, especially for one-off projects, and involving several steps. I seemed to be spending more time on planning and preparation instead of actually building. Surely there had to be a quick alternative to SMD construction that did not require PCB design/layout programs and PCB etching baths.

Lead-light copper foil:

During a recent session of surfing the Internet, I found myself, totally by accident, on the web site of the Adelaide Glass Centre, a lead-light supplies site based in Adelaide (*Reference 2*), and staring back at me from the display was a mention of copper foil tape – used in the lead-light industry for joining odd-shaped pieces of glass.

The foil that interested me was 4.76 mm (0.19 inch) wide and 1 mm (0.039 inch) thick – other available sizes appear to be in thicknesses of 1.25 mm (0.049 inch) and 1.5 mm (0.059 inch) and widths of 10, 6.5 and 5.0 mm. The foil tape comes in 33 metre (36 yard) rolls and is self-adhesive on one side (see Photos 1 and 2 on next page). One advertisement I saw mentioned that the self-adhesive glue is 'heat resistant' but this proved otherwise as you will read.

...staring back at me from the display was a mention of copper foil tape...

What could be better for making up thin copper tracks on blank or single-sided PCB (using the blank side)? A quick telephone call to the distributor confirmed that this particular size was in stock and for a cost of only $8.40 + GST, or around $12.00 posted. I placed an order and a roll arrived a few days later – unfortunately the thicker foil was not in stock but I will try that later. I suggest you 'Google' for 'leadlight copper foil'.

I wasted no time in some basic experiments with some old PCB off-cuts and soon found the whole system extremely user friendly, albeit with some minor problems as discussed below.

Incidentally, I make no claims as to the originality of this idea, but I have not been able to find any easily found similar methods on the Internet or in a number of technical books or magazines – my apologies to the author/s of any earlier similar articles if such is the case, but I can assure you this work has not been knowingly plagiarised.

The procedure:

The project

I decided to build a 'Signal Generator Extender', one based roughly around a project written up in *Experimental Methods in RF Design* (see *Reference 3*). Although my Rhode & Schwarz RF generator covers from 0.1 to 500 MHz, its resolution is only 100 Hz and I occasionally need 1 Hz for more exacting work, such as crystal filter design.

My HP-8922S GSM Test Set contains, among other things, a spectrum analyser and RF signal generator which has the required 1 Hz resolution but is limited to between 10 to 1,000 MHz. (A previous

article in AR, March 2009, describes a handy up-converter, designed by Mike VK4YNQ, which I built to enable the spectrum analyser to operate below 10 MHz).

Basically, the signal generator extender (converter) uses a balanced ring mixer with a fixed local oscillator of 20 MHz. The HP-8922S signal generator inputs signals (at -10 dBm) between 20 to 30 MHz to the converter, giving an output of 0.1 to 10 MHz.

Please note, however, that this article is not about this project but about the methods I used for its construction. Please feel free to contact me if you require more details of my experiments with this particular project.

Preparation and planning:

Carefully select a piece of PCB to suit the size of the project you intend to build – depending on the type of circuit you can either use double-side blank PCB material or, for RF work, use single-sided PCB – the copper side acts as a shield and by drilling holes from earth tracks to this screen, and soldering small links on each side, it makes for an ideal low impedance ground.

Personally I prefer to use single-sided boards as it is easier to use non-continuous ground tracks on the working side. My project was built on a spare piece of single-sided PCB measuring 80 x 50 mm (see Photo 3) – this size will allow me to add an additional amplifier stage and LPF if I find it necessary.

Make sure there are no deep scratches or chips on the blank side of the PCB and clean it thoroughly – I found methylated spirits to be as good as anything.

Using your mind's eye and careful trial and error, place the larger components, such as crystal oscillator module, toroids, mixer, and the like on the board in the position you would like to see them – if you are not sure, most circuits are drawn logically and with good separation between inputs and outputs, so simply follow that general layout.

Once you have an idea where larger components will be placed, then think about placement of your SMDs – I try to use the larger 1206 size as they are not too small to see and use, and are more difficult than the smaller sizes to ingest or inhale! Remember that you do not need very much space at all on which to mount these small devices.

Plan your ground, signal and voltage lines and have that in mind as you progress.

Copper foil track placement:

Simply cut off a piece of foil and backing paper slightly longer than you think you require for a particular track – household scissors are ideal for cutting the foil.

Using a sharp pocket knife or similar blade, carefully lift up one end of the foil from the backing tape, applying slight pressure against the blade so that the foil sticks to the blade – this makes it easier to place it accurately on the PCB.

If you're using long tracks, you may find the foil may curl back on itself – if you are careful it should not matter, provided it does not adhere to the remainder of the foil, creating a bit of a mess – discard it if that happens.

Carefully place one end of the foil on the desired position on the PCB making sure it is aligned nicely with an edge of the board (to keep tracks looking nice and parallel).

Then smooth the remainder firmly onto the board with your finger. I then found it best to use a flat, wide bladed screwdriver to ensure that the foil sticks firmly to the board – the end of a plastic biro or anything similar should do the same job.

I generally start with wide ground tracks, then voltage bus-lines. With ground runs or tracks, plan to drill them through in several places and solder short tinned-copper wire off-cut links on both sides (leaded component off-cut leads are ideal for this job).

This provides a low impedance ground to the copper side and also helps to anchor these tracks to the board's surface. Make sure you drill from the track side through to the copper side in case the drill bit, after passing through the board material, dislodges smaller or narrower foil tracks.



Photo 1: Packet of lead-light copper foil – 33 metres.

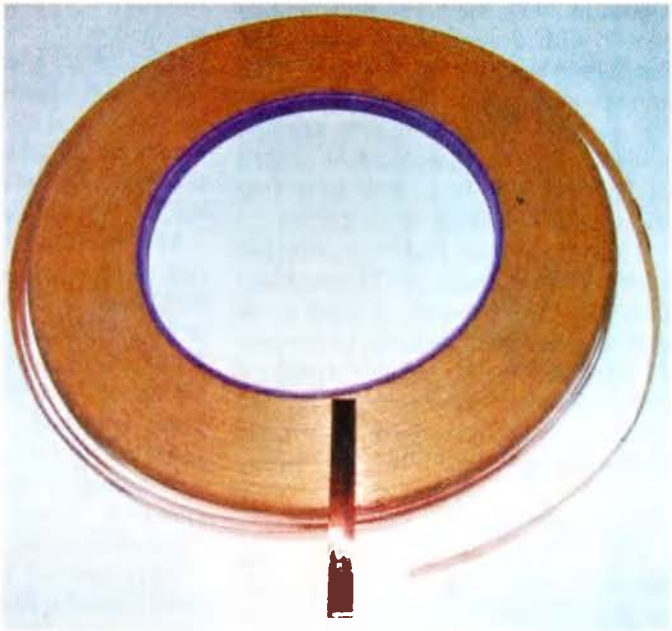


Photo 2: 33 metre roll of copper foil removed from packaging. It is suggested you leave it in the packet, or perhaps a zip lock plastic bag to reduce tarnishing of the foil.

Where possible, plan to use the full 4.76 mm foil strips, or if narrower tracks are required, use the maximum width you can – otherwise you will find the tracks may move as you apply heat from the soldering iron. If they do move, hold down one end with a small screwdriver, then move the track back into position before the self-adhesive backing cools and dries.

Whilst it is not necessary to tin the full length of most tracks, it does prevent further tarnishing of the foil.

However, you need to be *very quick* when tinning the tracks, using the lowest possible heat setting of your iron, otherwise they may lift off - but they can be easily repositioned using a small flat-bladed screwdriver or similar.

Once tinned, use the same screwdriver to again press the track firmly onto the board to ensure it has a good bond with the blank PCB surface. Use the minimum amount of solder and heat to prevent weakening or destruction of the adhesive.

I use tin/lead/silver solder, 0.71 mm in diameter – it is a little more expensive than standard resin cored 60/40 (lead/tin) solder, but wets more easily – you will also find that dry joints are probably a thing of the past when using this type of solder – and tinned surfaces appear to retain that nice shiny surface much better than normal solder; something well worth considering.

Continue to build up the tracks as necessary (*Photo 4*). I find that once I have started I usually place sufficient tracks for a few components, mount those components and move on to place additional tracks on the board – this way you will soon get a feel for the system and also to keep the overall project small and reasonably compact. You will be surprised just how small and compact you can make your projects with SMDs.

One problem I had with the project I built was that I should have mounted the SBL-3 ring mixer further down the right side of the PCB to allow for the addition of an MMIC amplifier to boost the 20 MHz LO signal – I will probably look into this later as it certainly will not take much to change it.

Remember you will be using SMDs so ensure the tracks you place are sufficiently close to ground tracks (or others) where components are to

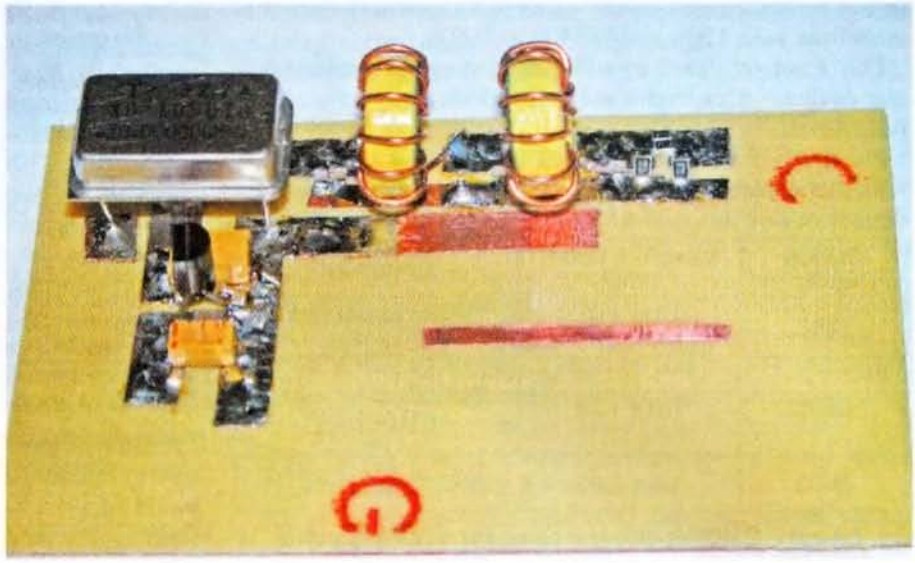


Photo 4: Further into the planning and building stage.

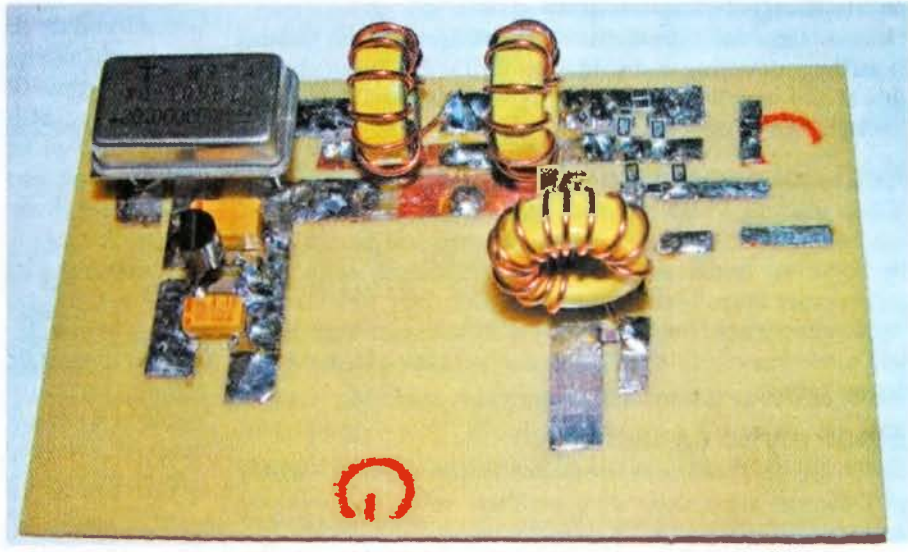


Photo 3: An example of using wide and narrow tracks – planning and building stage.

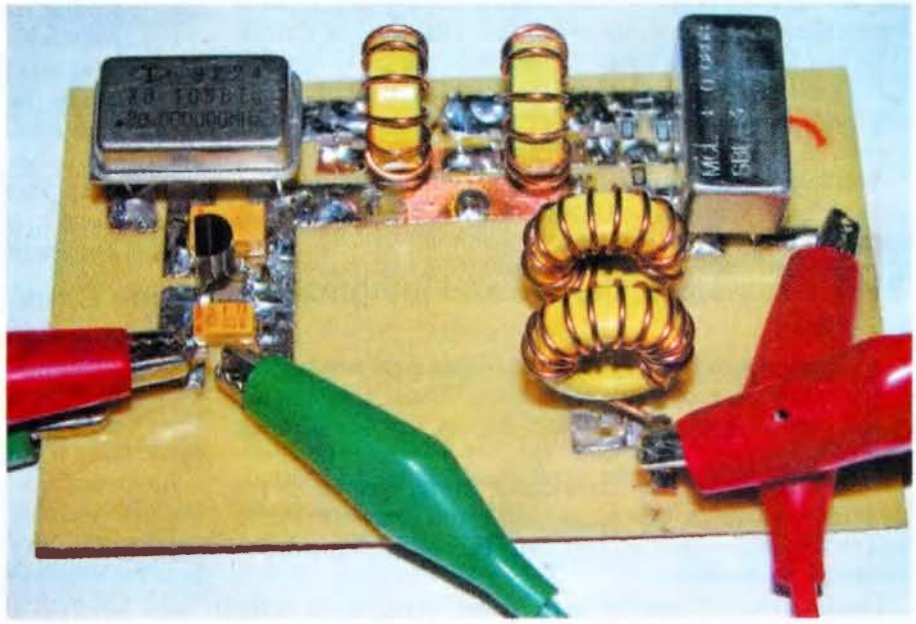


Photo 5: Finished project with test gear clips – note lifting of narrow track at the bottom of the photograph.

bridge between these tracks – I have successfully used this technique with 1206 and 0805 size SMDs.

I have not yet struck up sufficient courage to attempt 0603 size devices – I am frightened I will accidentally inhale these little devils.

However, I believe it would be possible to use them with this construction method. See Table 1 overleaf for the dimensions of common SMD resistors and capacitors.

Device size:	Length x Width (mm)	Comment
1206	3.2 x 1.60	Typical power rating ¼ W
0805	2.0 x 1.25	Typical power rating 1/10 or 1/8 W
0603	1.6 x 0.80	Typical power rating 1/16 W

Table 1 – SMD resistor and capacitor sizes and power ratings

Mounting components:

Because there are a great many tips available on the Internet regarding mounting and soldering SMDs I will not discuss this at any length in this article. Readers are encouraged to 'Google' for these sites.

Resistors and ceramic capacitors:

When placing SMD resistors and ceramic capacitors on the board, try to keep them nicely aligned and square – this is, however, easier said than done, especially with 0805 and smaller chips – and the main reason I try to stick with 1206 types where possible, not just because of their larger and more manageable size, but also because of their better power rating.

Electrolytic capacitors:

SMD electrolytic capacitors are available in a variety of different sizes depending on their value and working voltage.

In the simple signal generator extender circuit that I built for this construction article, I found small SMD tantalum types to be excellent – although not called for in the original circuit, their low leakage and small size made an attractive option.

Like all tantalums though, they are only available in relatively low values and working voltages, so choose them carefully.

You will note that I use tantalum capacitors (Photo 4) either side of the 5 V regulator (along with an SMD 0.1 µF chip capacitor on each side as well).

SMD transistors, diodes and integrated circuits:

These all come in various sizes – see Table 2 for a list of just some of the commonly available types. Please note that my signal generator extender project did not use any of these devices.

The closest I came was the use of a 5 volt regulator for the 20 MHz oscillator module but as I had a normal 'leaded' 78L05 in TO-92 style on hand, and no SMD equivalent, I decided to use that (see Photo 4).

I believe I would have had no problems in using one of the SOT regulators on this board though.

Typical Device Description:	Dimensions (mm)	Comment
Transistors: Small Outline Transistor (SOT)	3.0 x 1.75 x 1.3	Many different sizes and types available
Diodes: Small Outline Diode (SOD)	SOD-123: 3.68 x 1.17 x 1.60	Different sizes, including dual diode packages available
Integrated Circuits: Small Outline Integrated Circuit (SOIC)	8 or more pins, lead spacing 1.27mm	Just one of the many different sizes available

Table 2 – A small example of SMD transistors, diodes and ICs

Small two, three, or four legged devices should be relatively easy to mount using this copper foil type of construction. I would suggest, however, that prior to removing the backing paper, you trim down the end to be used for soldering the device on to, then extending the width out to a more usable size as it travels away from the component – that is, a narrower pointed end for the component mount, them becoming wider to provide maximum foil adhesion.

Multi-legged ICs and similar devices could be problematic for this type of paddy-board construction. However, Drew Diamond does suggest a great idea of using PCB substrate for mounting the small SOIC-8 pin types, such as the NE602 and similar (Reference 4). Use a small piece of PCB (with a suggested size of 20 x 20 mm), with four narrow hobby-type backsaw (used in balsa wood modelling) cuts (two of each) at 90° and 65°.

This substrate could then be super-glued or otherwise affixed to your PCB and used in that manner – if small SMD resistors and capacitors are required across various pins, these could be soldered directly to the substrate, with small jumper leads (or even copper foil strips) then used to wire this small sub-board into the rest of the circuit.

I have used this method in my modified TCF-80 TRX and found I could get away with using a 10-15 mm square PCB substrate with equally good results, and certainly less bulky than the larger size suggested.

For SMDs with more than 8 pins (for example, 10, 12, 14, 16, 18 pins) using this copper foil method, then either SMD 'chip carriers' (Reference 5) may be used as an intermediary mount with standard 2.5 mm (0.1 inch) pin separation, or alternatively, the 'dead bug' style (on their back and glued to the PCB). Short lengths of fine tinned copper wire could then be used to connect the various legs to nearby narrow pads of copper foil.

Some Caution Required:

I found that whilst it was easy to cut the copper foil into quite narrow strips, the narrow sections generally did not stick very well to the board after heat from the soldering iron had been applied. Long runs are not particularly bothersome, particularly if you do not tin the whole length of the run.

An alternative would be to remove the self-adhesive glue from the back of the foil (a clean, methylated spirit soaked rag does the job well) and resort to the standard PCB paddy-board system of using super glue or perhaps a *tiny* sliver of 'cold' hot-melt glue and use the soldering iron heat on the strip to melt the glue and hold the strip in place.

Similarly, because the bonding strength of the copper foil

contact backing is relatively weak, where you need to attach external wiring, often in the form of small pins or spigots (off-cuts of tinned copper wire), you will need to be careful not to apply too much lateral force to such wiring.

I found with my signal generator extender that small pins of tinned copper wire soldered to full width (5 mm) copper foil tracks were quite strong and withstood reasonable forces. However, when I attached a small alligator clip (from my spectrum analyser to test the finished project) to a test point soldered on to a very thin section of foil, it lifted free of the board (Photo 5).

I will replace that section with a 5 mm wide strip later on. Of course, when completely finished, I will ensure that any fly leads attached to the various test or voltage points are arranged so that no lateral forces are applied (easily achieved if the finished project is mounted inside a small diecast box).

Incidentally, my signal generator extender project took me a total of four hours, including the winding and measuring the LPF toroids, but now that I have a better idea of what to do I believe that time could be cut down to around three hours or less.

Some Tips:

Use minimal heat for all soldering – consider using solder with a silver content for excellent results.

Consider using the thicker 0.038 copper foil – it may be more tolerant to heat.

Overlap ground or other tracks that need to be lengthened or that change direction – then place a solder bridge over this joint to ensure an electrically continuous track.

Do not forget to drill several small diameter holes through to the copper foil side with ground tracks (and solder in short links) to provide a solid low impedance ground and assist with anchoring of the ground track – do this before you start mounting components.

Do not use jumper wires between separated ground tracks – you could end up with high impedance earthing points – and it will look untidy.

Use insulated wire jumpers for supply voltage tracks - it will be difficult to keep a continuous track with the adhesive foil strips.

Remember to keep track positions parallel and close to each other to allow for easy mounting and soldering SMDs between such tracks.

If you make a mistake, use a sharp pocket knife or small jeweller's screwdriver to lift up one end of a track and simply peel off – if you have to scrape the track off, be wary of small pieces that may create a short circuit.

Be careful of fine fragments of copper or solder if you use a sharp knife or flat screwdriver blade to restick tracks – could cause short-circuit problems.

I found that it was easier to make tracks longer than necessary, allowing for experimentation and trial and error component mounting – simply use a sharp pocket knife to cut through and lift off the unwanted track material.

This method of construction should prove ideal for designing PCB Microstrip lines – you will need to plug in the various thickness of the copper foil tape, copper side of the PCB and the dielectric material into the formulae that are around.

The copper foil would also be very usable for repairing missing or torn tracks on other equipment.

Take your time....

Summary

If you enjoy home-brewing and would like to try working with SMDs without resorting to dedicated PCB layout programs and PCB etching, or if you are finding that some leaded components are becoming scarce, then the construction method discussed in this article may be just what you need.

An additional benefit of using SMDs is price – I purchase most of mine from Rockby Electronics in batches (strips) of 100 for a cost of around 5 cents or less each. Used SMDs can also be ratted from unserviceable equipment quite easily – pop the boards in your pre-heated bench-top toaster oven (when the XYL is out shopping), then tap the board over a large piece of white paper – voila!

My thanks go to Mike VK4YNQ and Dick VK5BRH, for their valuable proofreading time, and Glenn VK4BG for feedback in the preparation of this article. Thanks also to Drew VK3XU for his excellent construction articles over the years – a great incentive to we home-brewers.

Sources

As this article is more about construction techniques, only basic supplier's information will be included:

PCB material and SMT components (to name but a few):

Rockby Electronics: http://www.rockby.com.au

Jaycar: http://www.jaycar.com.au

Altronics: http://www.altronics.com.au

Copper Foil: See *Reference 3* below. Any good leadlight suppliers in Australia.

Basic SMT size information: Wikipedia – Surface Mount Technology.

http://en.wikipedia.org/wiki/Surface-mount_technology

References:

1. "*Paddyboard circuit construction*", Drew Diamond, VK3XU, *Radio Projects for the Amateur*, Vol 4, 2008 pp 100-101.
2. Leadlight copper foil supplies – Adelaide Glass Centre – phone (08) 8363 0766: http://www.adelaideglasscentre.com.au/
3. "*Signal Generator Extender*", Wes Hayward, W7ZOI, et al, in "*Experimental Methods in RF Design*" published by ARRL, 2003, p7.16
4. "A "*Paddyboard' substrate for popular 8-pin surface mount chips*", Drew Diamond, VK3XU, *Radio Projects for the Amateur*, Vol 4, 2008 p102.
5. For SOIC SMD carriers:

http://www.ezprototypes.com/ChipAdapterSocketsMain.php

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Gridsquare Standings at 16 October 2009

144 MHz	Terrestrial	
VK2FLR	Mike	113
VK3NX	Charlie	106
VK2KU	Guy	102
VK3PF	Peter	88
VK3HZ	David	85
VK2ZAB	Gordon	78 SSB
VK2ZT	Steve	76 SSB
VK5AKK	Phil	76 SSB
VK2DVZ	Ross	75 SSB
VK3PY	Chas	72 SSB
VK3CY	Des	71
VK2EI	Neil	63
VK3BDL	Mike	63 SSB
VK7MO	Rex	63
VK2TK	John	62
VK3QM	David	62 SSB
VK3BJM	Barry	61 SSB
VK3II	Jim	56
VK3II	Jim	55 SSB
VK3WRE	Ralph	55 SSB
VK3PF	Peter	54 SSB
VK3ZLS	Les	51 SSB
VK5BC	Brian	48 SSB
VK4CDI	Phil	47
VK3CAT	Tony	46
VK3VG	Trevor	46 SSB
VK7MO	Rex	45 SSB
VK2AMS	Mark	44 SSB
VK4CDI	Phil	43 SSB
VK4KZR	Rod	43
VK7MO	Rex	43 Digi
VK5BC/p	Brian	42 SSB
VK3PF	Peter	39 Digi
VK4TJ	John	37 SSB
VK2TK	John	35 SSB
VK2KOL	Colin	34 SSB
VK3DMW	Ken	34
VK6HK	Don	34
VK3EJ	Gordon	33 SSB
VK3ZUX	Denis	33 SSB
VK2TG	Bob	32 SSB
VK1DA/p	Andrew	31
VK3VHF	Rhett	29 SSB
VK1WJ	Waldis	27
VK2EAH	Andy	27
VK2TK	John	27 Digi
ZL3TY	Bob	24
VK3TLW	Mark	23 SSB
VK4EME	Allan	23
VK1WJ	Waldis	22 Digi
VK3BG	Ed	22 SSB
VK3II	Jim	21 Digi
VK3ECH	Rob	20 SSB
VK4CDI	Phil	20 Digi

144 MHz	Terrestrial	
VK6KZ	Wally	20
VK4EME	Allan	19 SSB
VK3AL	Alan	18 SSB
VK3UDX	Geoff	17 SSB
VK2EAH	Andy	16 SSB
VK6KZ/p	Wally	16
VK3VHF	Rhett	12 Digi
VK4EME	Allan	12 Digi
VK2EAH	Andy	11 Digi
VK2EI	Neil	11 Digi
VK2KOL	Colin	9 Digi
VK2ZT	Steve	8 Digi
VK1WJ	Waldis	6 SSB
VK6DXI	Mirek	6
VK6HK	Don	6 Digi
VK1WJ	Waldis	5 CW
VK4AIG	Denis	5 SSB
VK4JAZ	Grant	3 FM
VK3QM	David	1 Digi

144 MHz	EME	
VK2KU	Guy	356
VK2KU	Guy	341 Digi
ZL3TY	Bob	300
VK3AXH	Ian	252 Digi
VK4CDI	Phil	182 Digi
VK7MO	Rex	155 Digi
VK2FLR	Mike	120
VK3CY	Des	70 CW
VK2AWD	David	65 Digi
VK2KU	Guy	43 CW
VK3DDU	Paul	39 Digi
VK2ZT	Steve	28 Digi
VK3VHF	Rhett	20 Digi
VK3HZ	David	19
VK3II	Jim	14 Digi
VK3NX	Charlie	5
VK4EME	Allan	5 Digi
VK3AXH	Ian	3 CW
VK2DVZ	Ross	2 CW
VK3AXH	Ian	1 SSB

432 MHz	Terrestrial	
VK2ZAB	Gordon	57 SSB
VK3NX	Charlie	50
VK3PY	Chas	50 SSB
VK3QM	David	48 SSB
VK3ZLS	Les	40 SSB
VK2KU	Guy	38
VK3BJM	Barry	38 SSB
VK3HZ	David	38
VK5AKK	Phil	38 SSB
VK2DVZ	Ross	34 SSB
VK3BDL	Mike	32 SSB

432 MHz	Terrestrial	
VK3CY	Des	32
VK3WRE	Ralph	32 SSB
VK2ZT	Steve	30 SSB
VK3PF	Peter	30
VK3PF	Peter	29 SSB
VK5BC	Brian	25 SSB
VK1DA/p	Andrew	24
VK3VG	Trevor	20 SSB
VK7MO	Rex	20
VK3UDX	Geoff	19 SSB
VK2TK	John	18
VK7MO	Rex	18 SSB
VK2TK	John	17 SSB
VK3CAT	Tony	16
VK5BC/p	Brian	16 SSB
VK2AMS	Mark	15 SSB
VK3BG	Ed	15 SSB
VK3TLW	Mark	15 SSB
VK3ZUX	Denis	15 SSB
VK4KZR	Rod	15
VK4CDI	Phil	14
VK4CDI	Phil	14 SSB
VK6KZ	Wally	13
VK2EI	Neil	12 SSB
VK2KOL	Colin	12 SSB
VK2TG	Bob	10 SSB
VK3AL	Alan	10 SSB
VK3ECH	Rob	10 SSB
VK3VHF	Rhett	9 SSB
VK4TJ	John	9 SSB
VK6KZ/p	Wally	8
VK7MO	Rex	7 Digi
VK2FLR	Mike	6
VK3DMW	Ken	6
VK4EME	Allan	6 SSB
VK6DXI	Mirek	6
VK1WJ	Waldis	4 SSB
VK2EAH	Andy	4 SSB
VK3PF	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi
VK4CDI	Phil	4 Digi
VK3VHF	Rhett	3 Digi
VK4AIG	Denis	3 SSB
VK4JAZ	Grant	3 FM
VK2KOL	Colin	1 Digi
VK2TK	John	1 Digi
VK2ZT	Steve	1 Digi

432 MHz	EME	
VK4KAZ	Allan	14 CW
VK4CDI	Phil	13 Digi
VK7MO	Rex	10
VK7MO	Rex	9 Digi

432 MHz	EME	
VK3NX	Charlie	5
VK3HZ	David	4
VK3AXH	Ian	2 Digi
VK2ZT	Steve	1 Digi
VK3VHF	Rhett	1 Digi
VK5BC	Brian	1

1296 MHz	Terrestrial	
VK3PY	Chas	39 SSB
VK3QM	David	39 SSB
VK3NX	Charlie	37
VK2ZAB	Gordon	29 SSB
VK3ZLS	Les	26 SSB
VK2KU	Guy	25
VK2DVZ	Ross	23 SSB
VK5AKK	Phil	22 SSB
VK3PF	Peter	20
VK3BJM	Barry	19 SSB
VK3KWA	John	19
VK3PF	Peter	19 SSB
VK3BDL	Mike	17 SSB
VK3HZ	David	17
VK3WRE	Ralph	17 SSB
VK3VG	Trevor	12 SSB
VK4KZR	Rod	12
VK2ZT	Steve	11 SSB
VK3BG	Ed	11 SSB
VK7MO	Rex	11 SSB
VK1DA/p	Andrew	10
VK2TK	John	10 SSB
VK3UDX	Geoff	10 SSB
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK3DMW	Ken	7
VK3ECH	Rob	6 SSB
VK2AMS	Mark	5 SSB
VK3VHF	Rhett	5 SSB
VK3ZUX	Denis	5 SSB
VK4TJ	John	5 SSB
VK5BC	Brian	5 SSB
VK6KZ/p	Wally	5
VK4CDI	Phil	4
VK4CDI	Phil	4 SSB
VK6KZ	Wally	4
VK4EME	Allan	3 SSB
VK5BC/p	Brian	3 SSB
VK6DXI	Mirek	3
VK7MO	Rex	3 Digi
VK2FLR	Mike	2
VK3CY	Des	2
VK3PF	Peter	2 Digi
VK3QM	David	2 Digi
VK4AIG	Denis	2 SSB
VK4CDI	Phil	1 Digi
ZL3TY	Bob	1 SSB

1296 MHz	EME	
VK3NX	Charlie	29
VK7MO	Rex	29
VK7MO	Rex	26 Digi
VK4CDI	Phil	20
VK4CDI	Phil	19 Digi
VK4CDI	Phil	2 CW

2.4 GHz	Terrestrial	
VK3PY	Chas	17 SSB
VK3QM	David	16 SSB
VK3NX	Charlie	15
VK3WRE	Ralph	11 SSB
VK3PF	Peter	7 SSB
VK3HZ	David	5
VK4KZR	Rod	4
VK6KZ	Wally	4
VK3BJM	Barry	3 SSB
VK1DA/p	Andrew	2
VK3PF	Peter	2 Digi
VK3VHF	Rhett	2 SSB
VK2AMS	Mark	1 SSB
VK2DVZ	Ross	1 SSB
VK2EI	Neil	1 SSB
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB

2.4 GHz	EME	
VK3NX	Charlie	28
VK7MO	Rex	9
VK7MO	Rex	7 Digi

3.4 GHz	Terrestrial	
VK3QM	David	13 SSB
VK3NX	Charlie	12
VK3WRE	Ralph	8 SSB
VK3PF	Peter	6 SSB
VK6KZ	Wally	4

3.4 GHz	EME	
VK3NX	Charlie	11

5.7 GHz	Terrestrial	
VK3NX	Charlie	12
VK3QM	David	11 SSB
VK3WRE	Ralph	9 SSB
VK3PF	Peter	7 SSB
VK6KZ	Wally	4
VK3BJM	Barry	2 SSB
VK3PF	Peter	2 Digi
VK6BHT	Neil	2 SSB
VK3ZUX	Denis	1 SSB

5.7 GHz	EME	
VK3NX	Charlie	11

10 GHz	Terrestrial	
VK3PY	Chas	14 SSB
VK3QM	David	13 SSB
VK3NX	Charlie	12
VK3PF	Peter	9 SSB
VK3WRE	Ralph	9 SSB
VK6BHT	Neil	9 SSB
VK3HZ	David	7
VK6KZ	Wally	5
VK3TLW	Mark	3 SSB
VK2EI	Neil	2 SSB
VK3BJM	Barry	2 SSB
VK3DMW	Ken	2
VK3ZUX	Denis	2 SSB
VK4KZR	Rod	2
VK7MO	Rex	2
VK1DA/p	Andrew	1
VK3BG	Ed	1 SSB

10 GHz	EME	
VK3NX	Charlie	13

24 GHz		
VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK3NX	Charlie	2
VK6KZ	Wally	2

474 THz		
VK3WRE	Ralph	3
VK3HZ	David	2
VK7MO	Rex	2
VK7MO	Rex	2 Digi
VK7TW	Justin	2
VK7HAH	Ben	1 Digi
VK7TW	Justin	1 Digi

Additions, updates and requests for the guidelines to Guy VK2KU. The guidelines (and the latest League Table) are also available on the VK VHF DX Site at www.vhfdx.radiocorner.net - click on Gridsquares. Next update of this table will close on or about 12 February 2010.
Stations who do not confirm their status for more than 12 months may be dropped from the table.

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Taming the SMPS beast

Ian Cowan VK1BG

A purchased SMPS was found to be practically useless for many applications because there were birdies generated right across the MF and HF spectrum.

In the March 2008 issue of this magazine, Drew Diamond VK3XU described a method of reducing the RF noise emission from a low cost commercially available switch mode power supply. Drew commented that his technique considerably reduced the strength of the noise.

The level of noise suppression achieved by Drew would be adequate for most purposes, but falls short of the needs of the most demanding environments.

Introduction

I have a caravan with a broadcast receiver installed which is frequently used for listening to distant broadcast stations such as 3WV on 594 kHz. The radio has hitherto been powered by a quiet linear power supply. The radio works well provided the ambient noise level is low.

A couple of years ago I saw advertised in the Jaycar catalogue a small SMPS rated to deliver 13.8 volts at 20 amps. In spite of its much higher output rating, it is actually lighter than the linear supply.

As a bonus, the SMPS also seemed to be about right to power my FT-897 which I sometimes take away with me, and which I had until then powered from a lash up supply to keep the weight down.

I hot footed it to our local store and talked to the man there about it. I asked about the noise levels generated by the unit, but he would offer no guarantees about the suitability of the SMPS for my purpose. Fair enough.

In due course I decided to take the plunge, and bought one. It turned out that the SMPS matched my worst fears. There were birdies right across the MF and HF spectrum, so the unit was useless for my purpose.

However in other respects it seemed fine, as it delivered rated output with good regulation and no sign of overheating. It has a built in fan, and this operates in an unusual manner, in that the fan speed seems to be modulated by the output load current. Slow for light loads, fast at 20 amps. And it is quiet.

So I decided to put some effort into getting rid of the RFI.

Warning

Switch Mode Power Supplies [SMPS] can carry lethal voltages. Also equipment using SMPSs regularly uses hot chassis construction, that is the chassis operates at a high voltage and so is not earthed. They [the power supplies] should not be worked on without protective equipment, both electrical and physical. Components have been known to shatter during testing. Precautions require that under no circumstances should it be possible to touch or be in contact with a working supply; especially by accident.

The SMPS is not a beginner's project.

A Little Theory

SMPS power supplies are by nature prolific generators of RF noise, and the reason for this is not hard to see. A typical small cheap SMPS delivers

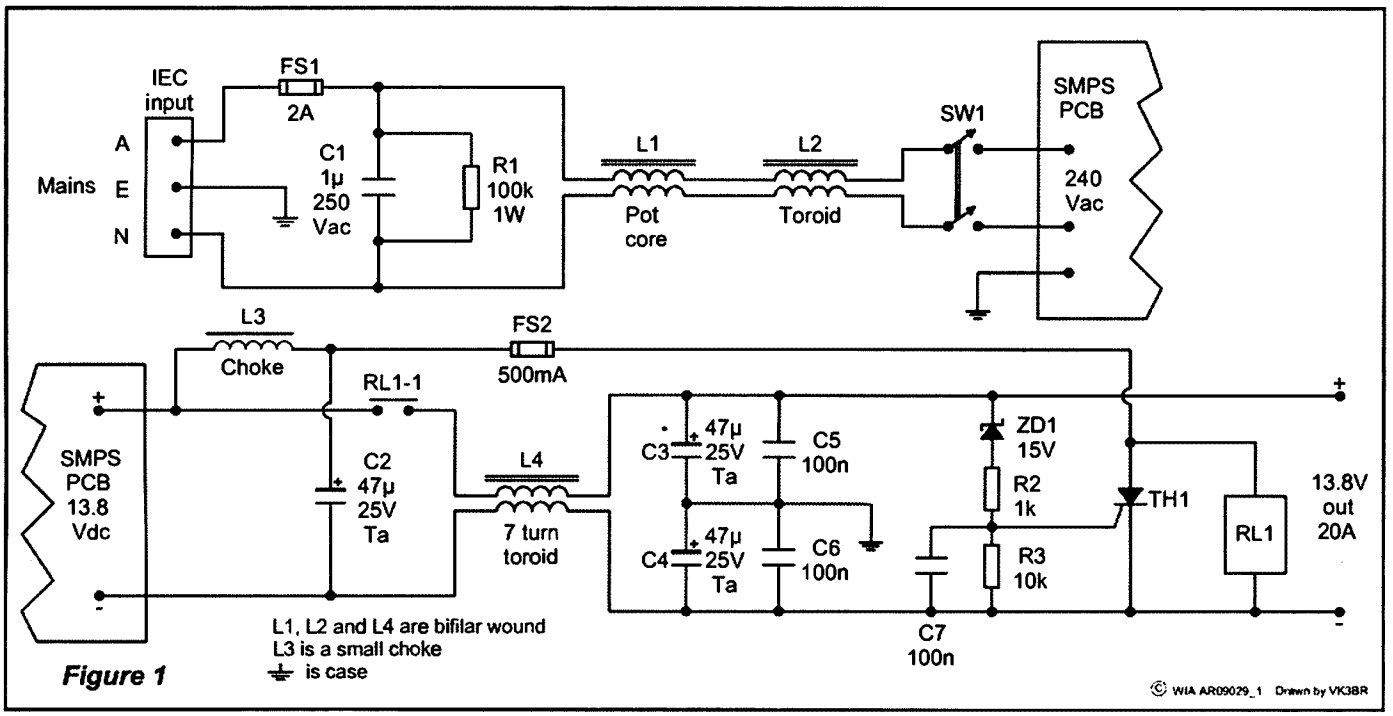


Figure 1: The circuit diagram.

the mains input direct to a high voltage bridge rectifier via some rudimentary filtering. The bridge rectifier then charges a large electrolytic capacitor to something like 340 volts DC for units used in Australia.

Also connected to this electrolytic is a fast power switch – usually a power MOSFET – which switches at a frequency upwards of 50 kHz. This switch operates at a short mark to space ratio (that is, the "on" time is much less than the "off" time), so that the average value of the output of the switch is much less than the voltage across the main electrolytic. This very spikey waveform then passes to a ferrite cored transformer for processing into regulated DC, and that is where we will leave it.

The main bridge rectifier operates from the 50 Hz mains, so it moves into conduction 100 times every second. During the "on" time of the rectifier the main electrolytic is connected direct to the mains input via an effective resistance of only a few ohms.

Now while this is happening, the high speed switch is also belting away at a much higher frequency – its operation modulates the voltage across the electrolytic and this modulation influence also appears across the mains for as long as the input rectifier is in conduction. Thus the mains supply becomes the bearer of a nasty complex RF waveform which is rich in the harmonics of the mains frequency, the high speed switch frequency, and the intermodulation products of all these frequencies.

Now you may think that the main electrolytic, which might be rated at 470 µF, or so, would be big enough to prevent the DC voltage across it from being modulated by the high frequency switch. Unfortunately these units typically have high internal resistance to high frequencies, so they are pretty useless as filters.

From the above it can be seen that cheap SMPS tend to noise modulate the voltage between the active and neutral of the incoming supply mains, and this form of noise is known as normal mode noise.

This is the most copious form of noise coming from most cheap SMPS, and is also the hardest to deal with, as it appears in a lethally dangerous environment.

The DC output from the SMPS is derived from a high frequency rectifier which is followed by a simple filter arrangement of limited efficiency. Thus there is also plenty of residual normal mode noise between the positive and negative output wires.

A second form of noise – known as common mode noise – is also conspicuous in cheap SMPS units. This is noise transferred by stray capacitive and inductive coupling into the mains and output circuits.

With a little reflection it is realized that the RF power level of the fast switch must be quite high, so cross coupling of significant levels of noise is readily achieved. Common mode noise appears across both wires of the incoming mains more or less equally in both amplitude and phase, as it also does on the positive and negative of the output.

From the above it can be seen that both common mode and normal mode noise must be dealt with at both the input and the output if a cheap SMPS is to be silenced.

Warning

Before I go further into this, I must issue a warning to anyone tempted to modify an SMPS along the lines I am about to describe. An SMPS is a very dangerous piece of equipment to work on. Circuits carrying mains voltages are involved, and in addition there is a large filter capacitor which may be packed with energy at over 300 volts DC.

There is enough charge contained here to cause instant death to the ignorant or careless. Do not attempt to modify such a supply unless you are fully aware of the safety procedures necessary for this work.

Method

The SMPS I bought was built into a small metal and plastic box which did not show much promise as an RF shield, do I decided to ditch it. I removed all the components from the case for future reuse. This included the main PCB of the supply, the fan, and the sundry terminals and components.

I then made up an aluminium box 260 x 200 x 80 millimetres using Al sheet and angle, and pop riveted all but the top together. These dimensions were chosen to match the FT-897, so the transceiver could sit upon the SMPS when set up.

I nominated one end of the box as the front, and drilled a series of 6 mm holes towards the front end of each of the side panels. These are to provide for ventilation when the fan is running. In the front panel is installed the mains switch, "Power On" LED and output terminals.

On the other end I mounted my standard Molex type connector (to power the FT-897), the fan, an accessory outlet, the mains fuse, and an IEC type mains inlet socket with integral EMC filter. This inlet socket is of the same type as used by Drew Diamond (like Jaycar Cat No. MS4003).

The main SMPS PCB was then installed into the bottom of the box, towards the front, on insulated standoffs. The original SMPS was configured for floating output – neither the positive nor negative sides of the DC output were grounded, and I decided to keep this configuration in the interests of reducing the number of earth loops in the installation.

The circuit arrangement inside the box is shown in Figure 1 and the physical arrangement is shown in the photographs. These show views from the front, Photo 1, and rear, Photo 2, of the unit.

The main PCB is in two parts – mains input and DC output – and these are well isolated from each other. They remain well isolated in the additional filtering - all external to the main PCB - which I have provided.

The mains supply enters via the IEC filtered connector and fuse FS1. The active and neutral wires are then wound together in bifilar fashion firstly through an old pot core (one turn) to form L1, and then twice through a 30 mm toroid to form L2.

The A and N wires then connect to the mains switch and PCB in the usual way. L1 and L2 provide a considerable amount of common mode noise suppression at RF, but do nothing for the normal mode component. This is dealt with by C1, a 1 µF 250 VAC mains rated capacitor scrounged from an old PC switch mode supply, and it is very effective in removing the normal mode component. F1 protects against possible failure of C1 or the main PCB, whilst R1 is there to discharge C1 for safety reasons. With this set up, noise levels injected into or carried by the mains are very low.

The DC output from the main PCB also has some degree of filtering on the main PCB but it is not enough.

As can be seen from Figure 1, a filtering set up very similar to that suggested by Drew Diamond is used. L4 comprises a 40 mm ferrite core toroid which has seven turns of heavy duty twin core flexible speaker cable wound through it.

As Drew describes, running the positive and negative leads through the toroid together prevents core saturation yet, in conjunction with C3 – C6 provides good suppression of the common mode noise components. These capacitors also suppress the normal mode noise components.

For the sake of completeness, Figure 1 also shows the circuit of a crowbar type over voltage protection arrangement in my SMPS. I doubt the need for this – it seems that unlike linear power supplies, it is very rare for an SMPS to produce an over voltage failure.

Some notes on the constructional aspects might be in order. First, there is only one connection point on the box, and to this are connected the earth pin on the IEC connector, the centre point of the C3 – C6 capacitors, and the earth point of the main PCB.

This single point earthing arrangement prevents the flow of RF currents in the metalwork of the case, and so, radiation from the case. Next, all capacitors larger than 1 µF are of the tantalum type – these are more effective as RF bypasses than the ordinary Aluminium foil variety. The smaller capacitors are polyester type.

Finally, the DC side of the main PCB must not be connected to the case – to do so would short out L4 at RF, and ruin the common mode suppression of the unit. , However it is OK to ground either side of the output of the SMPS.

Outcome

The results of the effort described above have been excellent. Under working conditions there is no detectable noise produced by the SMPS from the bottom end of the AM broadcast band through to the 10 metre amateur band.

This is a very satisfying result, and I now have no concerns about operating the SMPS in any environment where RF noise might be an issue. **ar**



Photo 1: The unit as viewed from the front.

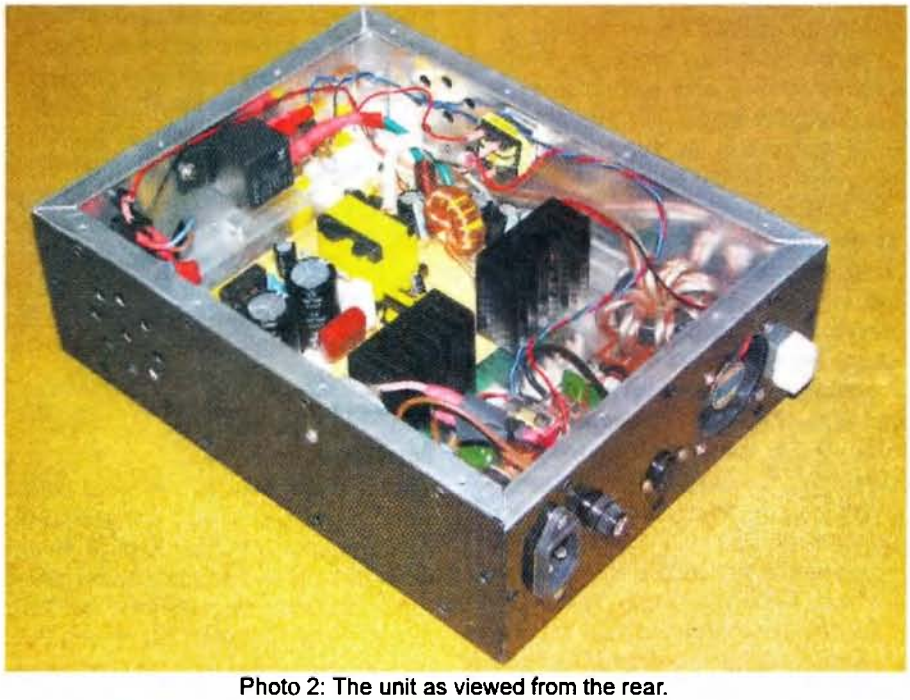


Photo 2: The unit as viewed from the rear.

Horkheimer Prize 2010

Rudolf Horkheimer was one of the first radio amateurs in Germany. His name is synonymous with the active amateur, who earns merit in amateur radio in a selfless manner.

The prize bearing his name is awarded by DARC (Deutscher Amateur Radio Club) for merits of amateur radio, its further development and the targets of DARC. The prize can be awarded to one or more persons or institutions and is not restricted to members of DARC. Any member of an amateur radio society in the IARU may apply. Self-proposals are permitted.

The prize is an etched glass-sheet and cash for non-personal use. This money may be spent for promotion of amateur radio at the discretion of the receiver.

The prize is awarded during the opening of HAM RADIO 2010 fair in Friedrichshafen, Germany.

Proposals must be submitted by March, 31st 2010 to DARC, Lindenallee 4, 34225 Baunatal, Germany or via E-Mail: darc@darc.de. The proposal shall list contact details of the proposed amateur, a short substantiation. Further informatio may be sought.

The decision of the jury is final and cannot be challenged. Should no suitable candidate be suggested, the prize will not be awarded in the year. **ar**

The VK9NI Norfolk Island DXpedition 2009

Allan Mason VK2GR and Tommy Horozakis VK2IR

The DXpedition was originally planned by the Hellenic Amateur Radio Association of Australia to use the call of VK9AAA. The callsign was changed to VK9NI three weeks prior going to air, because the VK9NI call became available, and we felt it important for the DX community to better identify the geographic location of the expedition.

An advance party of Teamleader Tommy VK2IR, Peter VK3FGRC and Keith VK3FT arrived on Sunday 19 July to erect the antennas. A delay with customs had put them a day behind. The remainder of the party Peter VK2FPGR, Raffy VK2RF, Allan VK2GR, Chris VK3FY, Tony VK3TZ, and Andrey VK5MAV arrived on Wednesday 22 July, to find Spider beams and low band verticals erected and operational stations ready to go.

Many antennas

Two Spider beams 10 metres high for 20, 17, 15, 12, and 10 metre bands. Refer Reference 2.
A 40 metre two element beam at 12 metres, on an aluminium tower.
An 18 metre high twin lead Marconi vertical with 16 radials for 80 metres. Refer Reference 3.
An 18 metre high twin lead Marconi vertical with 16 radials for 160 metres. Refer Reference 3.
Dipoles for 6 metres, 17 metres, 30 metres and 40 metres.
Two 200 metre long Beverage receive antennas for the low bands.

While all of the antennas performed well, of particular note was the 40 metre two element beam that was fantastic for receive and transmit even after a few elements of the capacity hat were broken and bent - a quick repair by Tommy and we were in business again.

A rotator motor would have been great when it was raining but you have never seen hams run so fast when the DX is on and, of course, the pouring rain also made them move rather quickly. The low band verticals were great for transmit and receive although after a few days, Tony set up two Beverage



Photo 2: The VK9NI 40 metre beam antenna at sunrise



Photo 1: Team photo with VK9NI banner and T-shirts prominently placed.



Photo 5: Raffy VK2RF

antennas that considerably improved the receive capability on both 80 and 160 metres. Unlike our city environments, the band noise level on the island was below S1 most of the time.

One morning, at about 3 a.m. the 160 metre vertical stopped working. In daylight next morning we found it tilted over at a precarious angle and on investigation, found that a tractor had broken some of the guy cords for the 18 metre squid pole and cut up many of the ground radials. The low band antenna team set to work and had the antenna operational again by sunset.

The station antennas were erected on the northwest tip of Norfolk Island, 112 metres above sea level, over soft, rich, red volcanic soil. Due to the rocky cliffs, no beaches were available for a salt water antenna erection at that part of the island.

The equipment

Comprised four IC-7000 transceivers, four HF linear amplifiers, two RTTY interfaces, and a pile of power supplies



Photo 4: Peter VK3FGRC

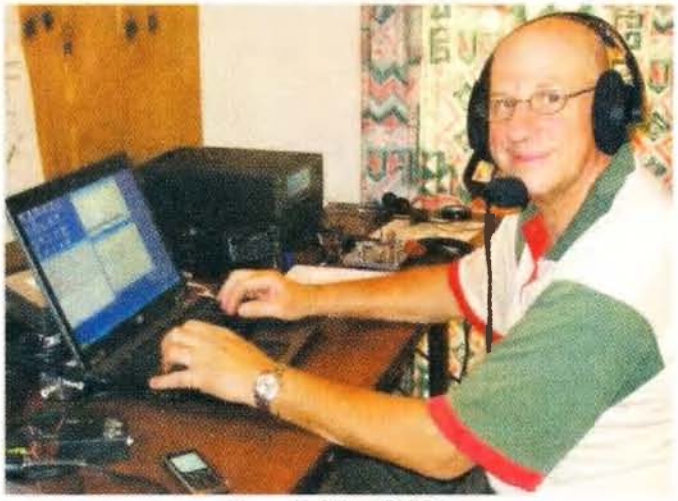


Photo 3: Allan VK2GR



Photo 6: The VK9NI team with sponsor's flag from Icom.

and cables. Standby radios were another IC-7000, an IC-706 and a Yaesu FT-897D.

Although propagation prediction was considered to be poor, the nine operators were kept busy most of the time – however all bands did die on a couple of mornings.

In the pileups, the JA discipline was excellent, the North Americans reasonable while many of the European stations just kept calling even though it was obvious that they could not hear us. Unfortunately, as is often heard with DXpedition stations, there was considerable jamming activity on the CW frequencies.

The IOTA contest was entered with the callsign VK9IR, due to the single transmitter contest rules. This allowed the other stations to continue operating as VK9NI on the other bands. Some 650 IOTA contest QSOs and 227,448 contest points were realised.

The last 80 metre QSO on our departure date was with EA8, about 40 minutes after sunrise. This is a very respectable distance for this band, of 19,700 km.

Many team members were concerned about the lowering of the 40 metre beam and tower. We were fortunate that the lowering was incident free prior to the rain commencing. Believe it or not the aluminium 40 metre tower was dissembled into a package one metre long and 1/3 metre round.

The cost for this DXpedition was over $30,000. Many thanks go to the sponsors who assisted defraying some of this cost for the participants. The Sponsor list comprised The Hellenic Radio Club of Australia, ICOM, WIA, Norfolk Air, Strictly Ham, The Pest Control Company, Step IR, Rippletech Electronics, Spiderbeam, Viking Fleet, HQ Antennas, West Mountain Radio, AT Electronic and Communication International, G3LIV Interfaces for Data nodes and the Amateur Transceiver Centre Sydney.

A post expedition review by Chris summed it up well and is repeated here with minor changes and additions – it was great to have spent a week in the company of you all; from our experience and considering the band conditions were not in the best shape, we did extremely well; the team deserves a good pat on the back; everyone played a part in making this an extremely successful Norfolk Island IOTA OC-005 activation.

The Positives

The cooks were great, and the low band verticals worked a treat. The use of a two element 40 metre beam was a gutsy move, but the results speak for themselves. Spiderbeams work great, and the SPE 1k-FA amplifiers proved their worth on this trip and the other amplifiers worked as expected. A big thank you goes to the CW operators (yes, more CW contacts than all the others) but especially to Andrey and Allan, the main CW operators.

Overall contacts across all modes totalled 12,000 plus, not a bad effort, and having openings on all HF bands, even if only for a short while on some bands, was satisfying.

The Negatives

We underestimated the popularity of RTTY, and there were not enough CW operators. The band conditions were poor, to say the least, and we had no antenna rotators.

The Learnings

We need to look at having a dedicated RTTY station on any future activation, with a multiband antenna. A greater antenna separation and geographically separated operating stations would better assist in activating CW, SSB and RTTY operation on the same band.

Conclusion

Good planning, a lot of hard work prior to and during the DXpedition, and many operating hours by the team realized some 12,000 QSOs at a time of very poor propagation.

Anyone considering VK9N, we suggest it would be hard to go past Pacific Palms, refer Reference 4. There is plenty of antenna room and many Norfolk Island pine trees available to string with wire antennas.

QSL cards for this expedition go to VK3HR.

To all the team, thank you for your specialty expertise and for making this VK9NI activation memorable. Where and when is the next activation?

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ar

"Amateur Radio Gives You Two Million Friends"

A Review of an eBook by Stan Gulich SM7WT

Al Shawsmith ex VK4SS

The latest to enhance the literary world of AR is a great CD titled as above, and great it is in every sense of the word.

It has been produced by well known author Stan Gulich SM7WT. The subject matter would fall within the parameters of contemporary personal history. As a book it will be over 1000 A4 pages with photos lavishly scattered throughout. Over 200 internationally known hams, authors, journalists, writers and others have come together to contribute a wide diversity of stories, events, dramas, traumas and adventures. The resultant book would need to be printed in three or more volumes.

Who knows - a work of this size may never be published again.

The author Stan SM7WT says the media and postal costs in Sweden are outrageous: e.g. to cash a foreign bank cheque is approximately US$11.00, so payment by cheque is not offered. So it will have to be electronically transferred or green stamps. In our case, one Australian 'stamp' coloured red should cover the cost.

Why did an amateur sacrifice two thousand DXing hours to assemble ARGYTMF? Only SM7WT can answer this question. As a private service, we all know the need for more and better PR. Perhaps ARGYMTF will fill this void.

Over time this great book will find its way into all the pertinent libraries and homes of the planet.

73 Al Shawsmith Ex. VK4SS.

WIAQ historian (retired).

Details can be found at: http://www.qsl.net/dl7cm/SM7WT/sm7wt.htm **ar**

Part 1 of 3

A complete 8 MHz IF system for USB, LSB and CW for a HF transceiver

Peter Wathen VK3EPW

This is the first of three articles describing the workings and construction of a complete HF transceiver IF system. It is a part of a HF transceiver that I am currently using that covers the 80 m, 40 m, 30 m and 20 m amateur bands for SSB and CW operation.

Circuit diagrams are also provided, refer Figures 1 and 2. I hope to describe the rest of the transceiver later.

Why present the IF system first? Because it can be used in any transceiver that is intended for the SSB or CW mode of operation; it is the universal part of a transceiver. If you want to home brew a transceiver this is the place to start, the exciting part that you can hear and see working (on an oscilloscope).

So what are the three parts:

1. The BFO or carrier oscillator module.
2. The crystal filter module (mounted on the IF board).
3. The complete IF module, RF to speaker, microphone to SSB, or CW send to RF carrier generation.

I have a logical reason for presenting them in this order. The BFO carrier module is a stand-alone boxed up module and will be a useful signal source for testing and debugging if you do not have a signal generator. Some 50 Ohm step attenuators will be needed to use it as a signal generator for the IF strip; these are easily made, with just three resistors. The ARRL Handbook gives values for PI and T network step attenuators of various dB values and, of course, I am sure you will find them on the Internet somewhere.

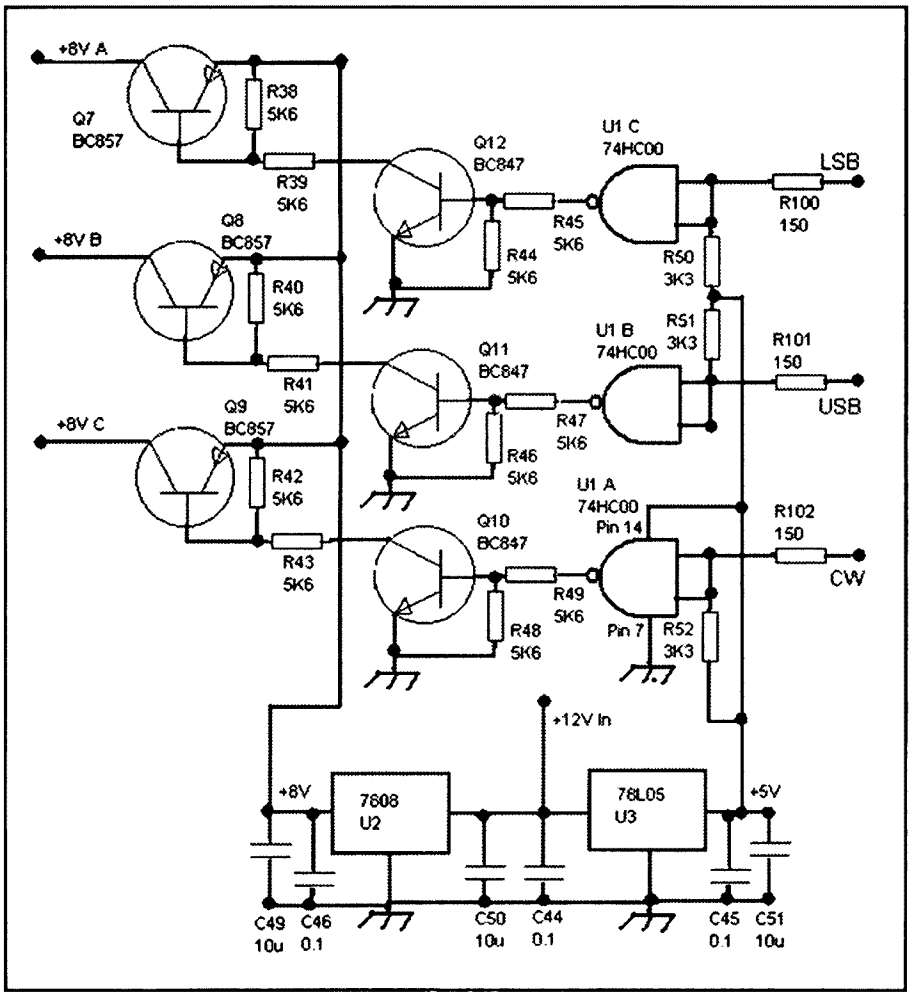


Figure 1: Circuit for BFO module.

Hopefully you have the circuits for the BFO module in sight. Refer Figure 1 and 2.

The circuit is comprised of three distinct sections, crystal oscillators (Figure 2), logic supply switching and the supply regulators (Figure 1).

The easy part first. The supply regulators are three pin (through hole) regulators. A 78L05 regulator is used for the five volt supply as it is only powering one 74HC00 IC (again through hole) with 3k3 pull up resistors and 5k6 output resistors.

There will be very little current drain from this device, well below the 100 mA maximum of the 78L05. The 7808 is probably a little bit of overkill for the eight volts to the oscillators but that is a good thing, trust me.

The construction note here is to make sure you locate the 10 uF 35 V solid tantalum surface mount capacitors and the 0.1 uF surface mount capacitors on both the input and output pins as close as possible to those pins, as shown on the circuit diagram. Locate the two regulators close together so they can share C50 and C44 - again as shown on the circuit diagram. I tend to draw a circuit diagram as I would lay out the circuit board, as it makes it easy to do the layout and easy to follow the circuit on the board when fault finding.

The next part of the circuit is the logic switching circuit. It is designed to be driven from a computer output port. The gates are all used as simple inverters, the 150 Ohm resistors are just there to give a little protection to the inputs. All three gates have their inputs tied to five volts through 3k3 resistors which makes the output of the gates close to zero volts. This results in the respective NPN

(BC847) transistors to be biased off or non conducting.

If, for example, the CW input were then grounded, the output of U1 A will become five volts, which will forward bias Q10, causing it to draw current through R42 and R43, that will drop the potential of the base of Q9 BC857 (PNP), causing it to pass current and provide a +8 volt supply to the collector, which is connected to the CW crystal oscillator.

All three inputs work on exactly the same principal (they are the same circuit). Obviously, only one input should be taken to zero volts (ground) at a time.

Now, for the slightly more complicated part of the circuit, the crystal oscillators. Refer Figure 2. The first thing you will see is that there are three circuits consisting of essentially the same thing so I expect someone to ask 'why build three oscillators'? The reasons for that are as follows:

I hate trying to switch crystals electronically, as no circuit that I have tried has been a success. I have, but also hate, using one crystal and electronically switching in inductors and capacitors to pull them off frequency, even though the circuit presented essentially does use trimmer capacitors to pull the 8 MHz crystals off their intended frequency. Two of the crystals were the same type I used in the IF filter (RS Components 472-0253) - they are sold in packs of five so you will need two packs to complete the filter module and this module, however they are not very expensive. The RS Crystals were easy to pull high in frequency but did not pull low; luckily I had some older (Dick Smith, Jaycar) crystals which did not need much encouragement to pull low.

The cost of the components to make the three oscillators is relatively inexpensive. Having individual buffer amplifiers after each oscillator makes the output diode

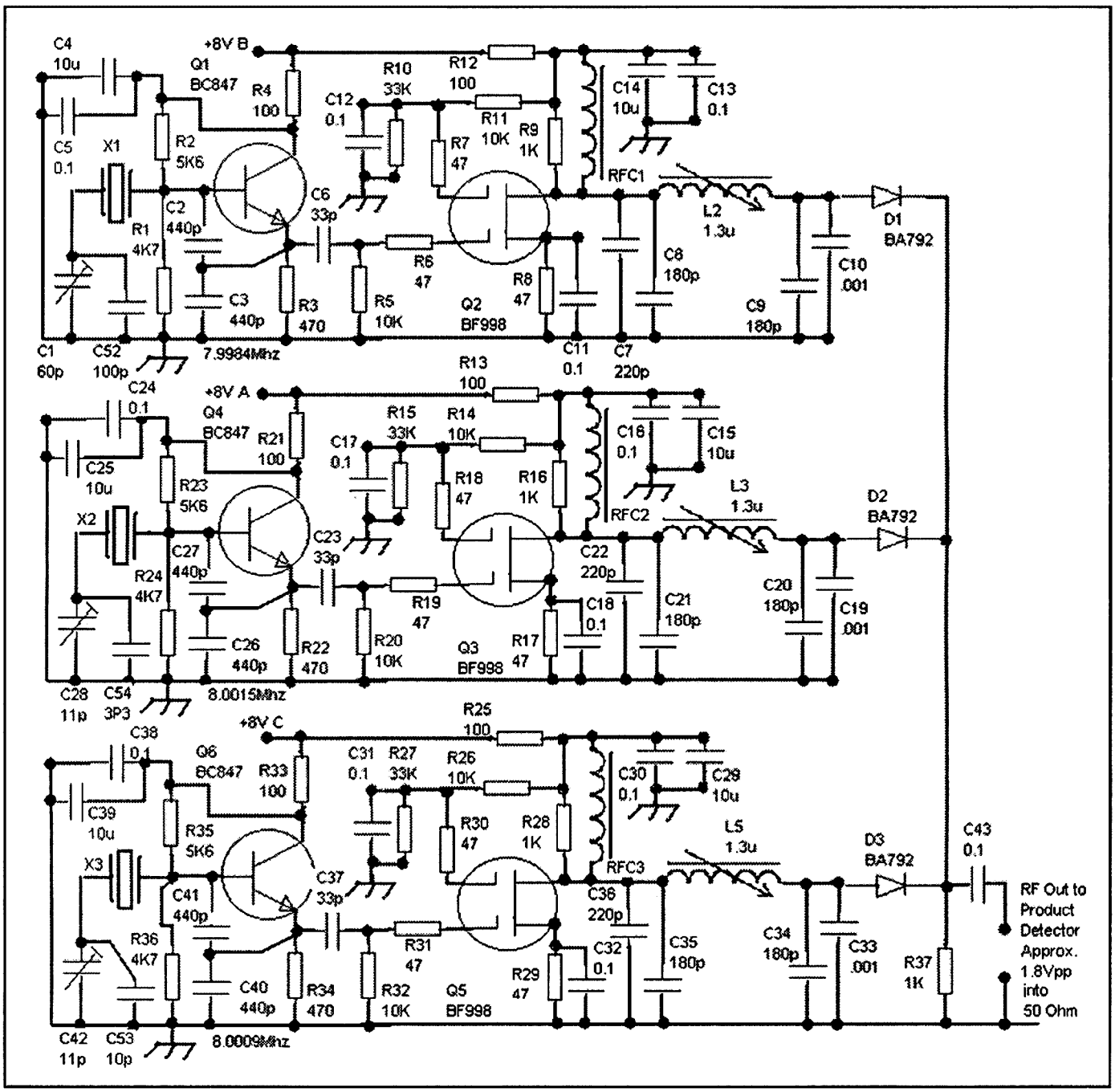


Figure 2: Circuit of the crystal oscillators.

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switching easier and gives the flexibility of adjusting the output of each individual oscillator if crystal activity is different between the oscillators. It is important to have a constant level to the diode ring modulator.

The first part of the circuit is a basic Colpitts oscillator (capacitive feedback), nothing incredibly interesting. R33 is a decoupling resistor. It is important with all RF and AF circuits to provide some decoupling from the power supply for each active stage. The decoupling is R33, C38 and C39 (these are in the CW oscillator circuit).

I was asked for circuit point voltages for debugging. I really do not even think about them anymore having worked in electronics for some time, at least not for simple circuits like these.

The following is how to arrive at the voltages in the circuit that you should be able to measure without anyone telling you. Ohms Law, yes you knew it was going to come up again. First the voltage at the base of Q6, which is supplied by R33 and R35, and R36 is also in the mix. For quick estimations ignore R33 as it is a relatively low resistance and hopefully will only have a low voltage drop across it, so assume at first eight volts are across R35, R36. Add the values of R35, R36 together, 5600 Ohms + 4700 Ohms = 10300 Ohms, then E/R=I, so 8/10300 = 0.00077669 amps flowing. Now if we multiply that current by the value of R36 we will see the voltage across it (the voltage on the base of Q6) is 0.00077669 x 4700 = 3.65 volts. This will not be exactly correct as the base also draws some current but it should be close to what you measure with a multimeter. An NPN transistor with 3.65 volts on the base will have about a 0.6 to 0.75 volt drop across the base emitter junction, say 0.75 then 3.65 - 0.75 = 2.9 volts at the emitter. Now 2.9 volts across R34 (470 Ohms) gives you (E/R=I) 2.9 /470 = 0.0061 amperes, which means the expected drop across R33 (100 Ohm) is 0.0061 x 100 = 0.61 volts, so now you can do all those calculations again with a voltage of 8 - 0.61 = 7.39 volts across R35, R36. If the DC voltages you measure are not in that ball park something is wrong. Also remember RF current will affect the measurement, but then again if the circuit is oscillating why measure, it works!

The next part of the chain is the buffer amplifier BF998, very small but very wonderful. The first thing of note in the circuit is R31 and R30, both 47 Ohm resistors. They are stopper resistors to stop the MOSFET BF998 from going into self oscillation at a frequency you cannot see. They need to connect directly on the pad that G1 and G2 are soldered to on the board. I used 0805 surface mount resistors here as they are nice and small although I normally use 1206, larger surface mount resistors, as they are easier to handle.

The oscillator output is fed to the buffer amplifier through C37, a 33 pf capacitor. It is small in value to minimize the effect of the buffer on the tuning of the oscillator. G1 is at ground potential through R32 and G2 is used to set the gain of the amplifier. You can calculate the voltage on G2 using Ohms Law, as in the example for the transistor base voltage. It is around five volts; lowering the voltage by increasing the value of R26 will drop the gain. In general increasing the voltage on G2 increases the gain but there is a point close to supply voltage where the gain will start to decrease again. If you like to experiment use a 20 k potentiometer/trimpot on G2 and watch the RF output with a CRO.

I use low value resistors on the source of the MOSFET as it allows them to draw more current, which means more gain, more output and usually cleaner output. Of course this theory has its limits, the maximum current and power dissipation of the MOSFET need to be remembered. R28 and RFC3 provide a high impedance low resistance load to the drain of the MOSFET.

Last but most important C33, C34, C35, C36 and L5 form the output matching circuit from the drain of the MOSFET to the output, 1000 Ohms to 50 Ohms out. (The ARRL Handbook has the formulas for calculating the values of the Pi Network; I converted them to a BASIC program on the computer to make life easier).

One more thing, and very important. For D3 (BA792), it is important to use this type diode, as it is made specifically for this purpose; you can purchase them from RS Components.

When the oscillator has voltage applied to it, current will flow through RFC3 and through L5 through D3 and down R37; this achieves two things, first it forward biases D3 allowing it to pass the AC signal voltage and creates a positive DC voltage across R37, reverse biasing D2 and D1; they both should have nil volts on their respective anodes. This makes

sure that they will not conduct any RF signal.

That was a bit long winded but now you know diode switching, MOSFET amplifiers and how to work out your expected voltages and just like your school teacher, I will not be repeating myself.

Great, now you can build the module.

I have not included the layout for the PC board but there are some photos of the constructed module, refer Photos 1 and 2. In photo 1, the control section is on the left.

I use single sided PC board. It is available from Jaycar or Dick Smith. I use PC box type construction, as you will see this from the photos. The shielding material for the top and bottom is from a Milo tin. Buy the big can with no ridges in the sides, use a can opener (I use the hand held rotary type) to remove the top and the bottom of the cans, then a decent pair of scissors to cut straight up the seam, roll it out and you have perfect shielding tin. A warning, it is very sharp, so watch your fingers.

Layout should be as per the way the circuit is drawn, all three oscillators as close as possible together to make the linking of D1, D2 and D3 as short as possible.

A quick note for the layout. There is a freeware program called Eagle Soft which is circuit drawing and PCB layout software. I have used it for the layout of several other smaller and more intricate circuit boards in the transceiver. The limitation is the size of the PCB that you can do with the freeware version. It works on Windows, prints out the board actual size and gives you a way to store some layouts. I simply used a Dalo pen for this board and the rest of the IF system.

I learnt when looking at the way the Japanese put their radio circuit boards together that you keep the RF and AF stages small and close together on the circuit board. Do not worry about making circuit tracks for the supply rails, just decouple them and make a hole. Use hook up wire to wire up the DC, it gives you much more freedom when doing the layout. Keep the DC and switching of DC on one side and the RF stages on the other side.

Component notes: All capacitors 0.1 uF and below are surface mount, either 1206 or 0805. All resistors are surface mount 1206 or 0805. They are all available from



Photo 1: The BFO bottom layer.



Photo 2: The BFO from the top side.

RS Components or Farnell Components. They both do mail order over the internet so no problems.

The 10 uF capacitors are surface mount solid tantalum 10 uF 35 V and are available from Jaycar.

BC857 and BC847 are surface mount, available from Jaycar. BA792 and BF998 are available from RS Components. 74HC00 is DIP14, 7808 is TO-220 and the 78L05 is TO-92, and are available from Jaycar, Farnell or RS Components.

Crystals X2 and X3 are the same type used in the crystal filter module; you will need two packs (RS Components sell them in a pack of five, part number 472-0253). They could be moved higher in frequency easily but were not so easy to move down in frequency. I found an old HC49 8.000 MHz crystal and used it for X1. Check at Jaycar or Dick Smith.

Trimmer capacitors came from RS Components but I am sure Farnell and Jaycar have suitable substitutes.

Remember the value of the capacitors tuning the crystals is dependent on the specific crystal; you may need to experiment if they do not work.

You will also need a roll of 0.25 mm enamelled copper wire; you can go a



Photo 3: Raising the IF can dimples with a small screwdriver.

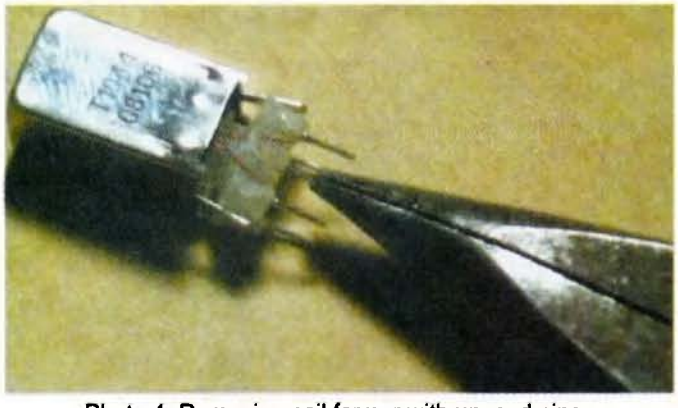


Photo 4: Removing coil former with unused pins.

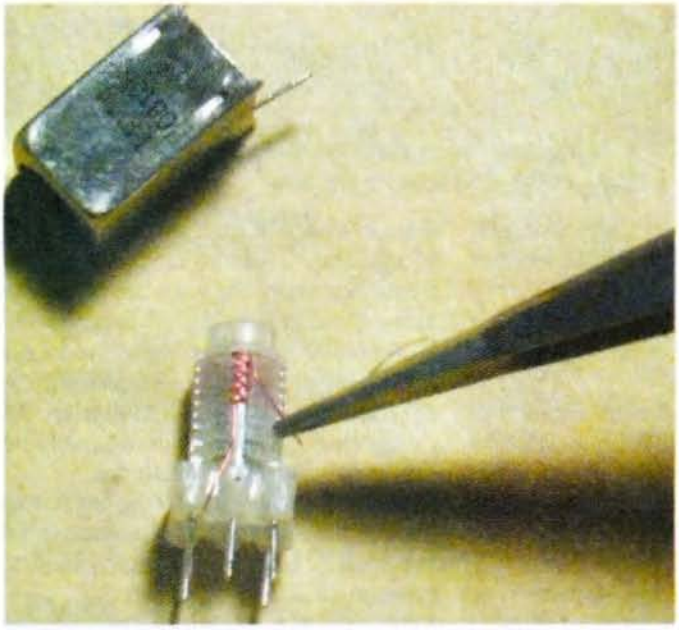


Photo 5: Break top winding to remove turns for new value.

little smaller if you have to, to 0.2 mm. The wire is to wind the RFCs and ring mixers throughout the project. While we are on the subject, RFC1, RFC2 and RFC3 are all 10 turns of 0.25 mm wire wound on FX1115 ferrite beads. The FX1115 beads are available from Jaycar in packs and again are used through this entire project.

The last component is L5, L3 and L2, they are a TOKO Inductors 292CNS T1044Z pre wound miniature 2.2 uH adjustable inductor which I modify and use throughout the transceiver. At a rough guess, through the entire project I have used close to 80 of them; they are very easily pulled apart, small and easy to re-wind.

The hard bit is that they are available through EATON Electrics in Australia but the minimum quantity I was quoted was 400 pieces (that was in February 2008). Good thing they are easily modified; if you are in a club just get them, they are good.

I have attached some photographs of the re-winding procedure, refer Photos 3, 4 and 5.

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WIA 100 Committee Call for Articles

The WIA 100 Committee continues to receive material from amateurs wishing to enhance our recorded history. Our "Call for historical articles" has resulted in some very interesting and worthwhile material being received.

This month, the Committee acknowledges the following:

From Alan VK3AL: A fascinating story of his early involvement in radio from 1927 to 1956 complete with some unforgettable lessons!

Richard VK7RO has forwarded a large number of early Australian magazines for inclusion in the Archive. While most of these magazines were directed at the broadcast listener, they also report on amateur activities and so will add to our early knowledge.

From John VK3ACA: A transcription of part of the Minutes of The Amateur Wireless Society of Victoria (1911-13).

Bruce VK3WZ has supplied information on his grandfather, R.P. Whalley 3JZ, who was involved with the early days of the Brighton Radio Club and the WIA. The Whalleys have been amateur radio operators for four generations!

All historical material will be used in *Amateur Radio* magazine or on the WIA website. Material will be indexed and placed in the Institute's Archive and will be available for future research.

Thank you to all who have contributed, but we would like more! Please help us to preserve the history of our hobby by writing about your club, an outstanding amateur or event.

The committee also welcomes articles on the future of amateur radio: The changes foreseen and even predictions for our future. Many new modes are being adopted by the more progressive amateur, how are these going to set the stage for the future amateur? **ar**

A 30 watt linear amplifier for two metres

Dale Hughes VK1DSH

There are many different types of low power SSB transmitters, or transceivers, for use on the two metre band. For local or for line-of-sight contacts low power is adequate and many enjoyable contacts can be had. However, for longer or non line-of-site paths higher power is desirable.

This article describes the design and construction of an amplifier, which will produce in excess of 30 watts PEP when driven by a low power transmitter. The prototype is used with a home-made SSB transceiver with three watts output. The input coupler can be adjusted to accept higher or lower power levels if required.

It was decided to base the design around the readily available and reasonably priced Mitsubishi amplifier modules and printed circuits boards, which can be purchased from Mini-Kits in South Australia. A number of different types are available, covering various frequency ranges and power levels.

The one used in this design is a RA60H1317M which is nominally a FM unit with a 60 watt output, but by setting the bias to an appropriate level the module works well as a linear amplifier. The Mini-Kits PCB was modified to suit the particular requirements of my transceivers. Press-To-Talk circuitry was added by cutting the track which carries power to the bias regulator.

Circuit description

The RF input from the excitation transceiver passes through a network of resistors and a variable capacitor, which can be adjusted to give the required drive level.

The resistors reduce the input power to the module so that it isn't over-driven; they also ensure the correct termination impedances for both the transceiver and amplifier.

The output filter consists of two low pass pi sections coupled by a small value capacitor and the end result is a band pass filter with a pass band of several megahertz centred on 144.1 MHz.

A novel feature is the use of a short length (~10 mm) of semi-rigid coaxial cable as the coupling capacitor (C16) between the two filter sections instead of a conventional leaded or SMD component; this is done because of power considerations.

The capacitance of a conveniently longer length of cable is measured and the appropriate length to give 1 pF is cut off. Inductors L1 and L2 are 8 turns of 0.91 mm enamelled wire close wound on the shank of a 6 mm drill. The tuning capacitors (C15 and C17) are small film type trimmer capacitors. The measured insertion loss of the output filter was less than 0.4 db.

Both the input attenuator and output filter were based on designs published in RSGB publications: a version of the input attenuator was published in volume 3 of the *Microwave Handbook* (1992) and the output filter was published in the *Radio Communications Handbook*, 8th edition (2005).

To avoid stray coupling between various parts of the amplifier, the input attenuator and output filter are mounted in small screened enclosures made from scrap PCB laminate. In both cases the components are soldered 'dead-bug' style to the copper laminate.

The amplifier bias voltage is provided by a 7805 three-terminal regulator and the amplifier quiescent current is set using a trimmer potentiometer, which acts as a simple voltage divider, the correct bias voltage is 4.5 volts.

So that the transceiver can control the amplifier and switch between transmit and receive, the Mini-kit supplied printed circuit board was modified to switch the bias on during transmit and off during receive, this was done by cutting the track on the PCB which provides power to the 7805 regulator.

Power to the bias regulator is passed through a separate pass transistor which is controlled by the PTT line. With zero bias, the amplifier quiescent current drops to practically zero as enhancement FETS are used within the RF amplifier module.

The transceiver interface also controls the two relays in the RF path. During receive, the amplifier is bypassed and the input signal passes directly to the receiver. When the PTT input is grounded, the RF relays are energised



Figure 2: An external view of the completed amplifier.

and the bias is applied to the amplifier module. RF output from the transceiver is then amplified and connected to the antenna.

Miniature coaxial relays removed from surplus equipment were used in the prototype, but Mini-Kits also sell relays that would be suitable for use in the amplifier.

General construction

The amplifier was mounted inside a diecast box that was on hand; the removable panel became the bottom of the amplifier and all the amplifier components were mounted on the sides or top of the box.

A square hole was cut in the top of the box so that the PCB and amplifier module could be screwed to a heat-sink.

The modules containing the input attenuator and output filters were also screwed to the top of the box adjacent to the Mitsubishi module. Miniature coaxial cable was used to connect the modules and relays.

No specific details about the heat-sink can be provided as it was purchased at a trash-and-treasure meeting of the local radio club.

However it is big and heavy; which it needs to be if extended use at high power is intended. Overall efficiency of the amplifier module is approximately 50%, so significant heat needs to be dissipated.

Note that it is very important that the heat-sink be completely flat in the area where the amplifier module is mounted otherwise the amplifier substrate may crack when it is screwed to the heat-sink. Also, the module leads must be soldered to the PCB after the module is screwed to the heat-sink.

Other components are mounted on a small length of tag-strip screwed to the side of the box. Input power terminals, PTT terminals and the RF input/output connectors are located on the rear of the box. Front panel LED's and an optional ammeter complete the design. One LED indicates when power is connected and the other illuminates when the amplifier is in use.

Adjustments

Amplifier bias: the bias voltage for the amplifier must be set to 4.5 volts, and this should be done before the amplifier module is soldered to the PCB. Once the bias voltage is set it must not be changed.

The output filter is adjusted by transmitting at low power into a 50 Ω dummy load and adjusting capacitors C15 and C17 for maximum power output.

Output power from the prototype is 30 watts with three watts drive (via the input attenuator). Current consumption at this output is 4.5 amps at 13.6 volts. Higher power can be achieved at the expense of amplifier linearity and signal quality.

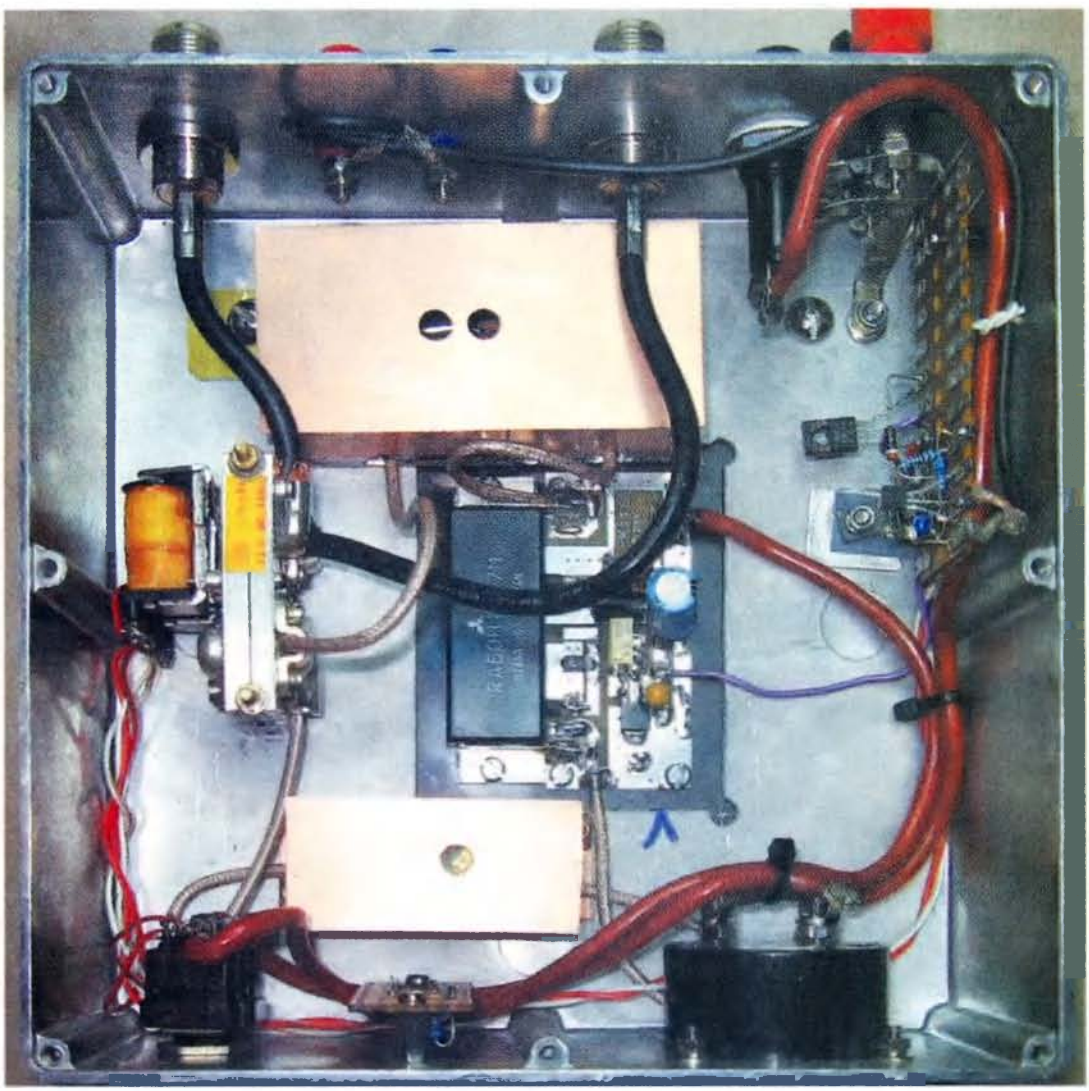


Figure 3: An internal view of the completed amplifier.

Suppliers

As previously mentioned, the Mitsubishi amplifier module and associated PCB were obtained from Mini-Kits Pty Ltd (see: www.minikits.com.au). The variable capacitors were obtained from Rockby Electronic Components (see: www.rockby.com.au). The rest of the components can be obtained from the usual range of suppliers.

Conclusion

A linear amplifier suitable for use on 144 MHz has been presented. The prototype unit performs very well and significantly enhances the capability of my station. Signal quality reports have been favourable and no interference problems have occurred during use.

No particular problems should be expetienced during construction or use of the amplifier.

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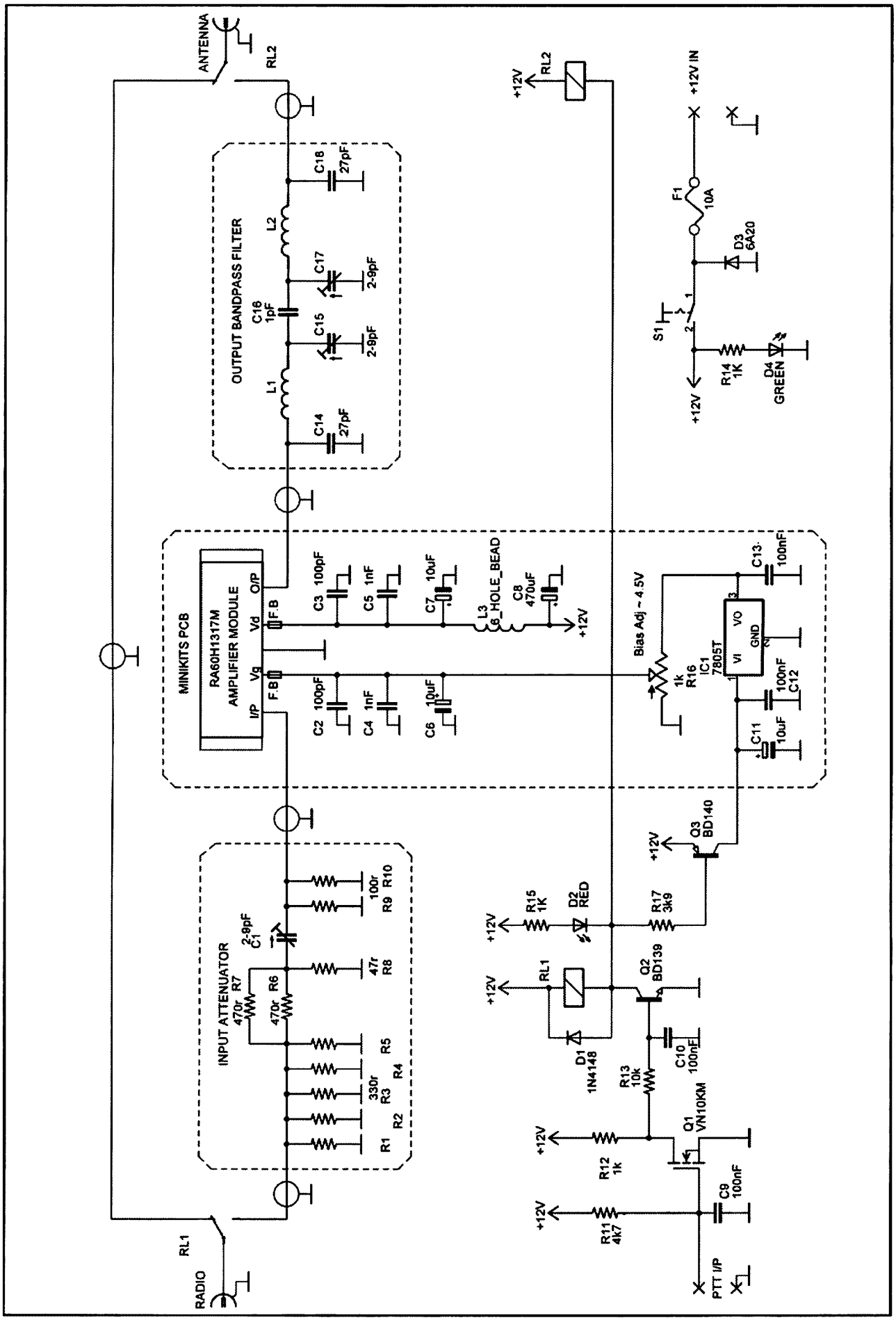


Figure 1: Schematic of the 144 MHz linear amplifier. The amplifier and bias circuitry are mounted on a printed circuit board purchased from Mini-kits Pty Ltd. The input attenuator and output filter are housed in enclosures made from scrap PCB laminate. The unit enters transmit mode when the PTT I/P is grounded.

Centenary Merchandise

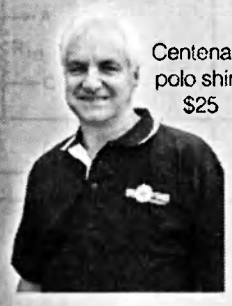
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The merchandise below sports the WIA 100 Years Centenary logo and is being expanded to include many other commemorative items and memorabilia. Members are encouraged to keep an eye on the WIA website for all the latest products. Visit **www.wia.org.au** and click the Centenary logo on the right hand side of the home page.

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Spotlight On SWLing

Robin Harwood VK7RH

2009 is almost over with the shortwave scene rapidly downsizing. HCJB in Ecuador has gone, outsourcing their programming to Chile, French Guiana or the UK. HCJB-Australia, a separate entity has carved a niche broadcasting to the Sub-continent and S.E. Asia. Their senders are located at Kununurra (WA) and they are hoping that a third sender may be operational during 2010.

Radio Prague in Czech Republic may be the next major broadcaster to quit shortwave on the 31st December. There naturally was protest from its worldwide listeners but sentimentality or history does not easily sway the anonymous bean counters making these decisions.

They favour podcasts and streaming over shortwave radio, which they see as an obsolete technology. The former may be cheaper to produce yet there is a larger audience listening to radio. Ironically Bratislava, the capital of Slovakia is also considering abolishing shortwave broadcasting. Split from Czechoslovakia in 1993, both still share the HF senders.

Poland closed down their shortwave senders in favour of leasing transmitter time in Germany. Signals dramatically improved but the Poles did not count on the senders being onsold. Poland now leases airtime from the Austrians. Vienna still is on shortwave but effectively closed down the External Services in favour of relaying the domestic programming.

Myanmar, formerly Burma, has been easily heard here, drifting between 9730.8 and 9731 from 1030. In local languages it has a very distinctive music style, more American C&W than either Bollywood or Thai, two styles that dominate the region. However at 1100, the BBC World Service comes on exactly 9730 and unsurprisingly it is in Burmese. The Singapore senders easily drown out the hapless Burmese but only for 30 minutes on weekdays, leaving Myanmar in the clear at the weekends.

I do not know if the program originates from Yangon (Rangoon) or from the newly constructed national capital. It signs off around 1130. I wonder if it is the same broadcaster on 5770, also from Myanmar that is audible around 1230.

The annual Sydney-Hobart yacht race is on from the 26th of this month. HF continues to be used but the night-time channel of 6516 will be affected by a South Korean clandestine station on 6518. The North Koreans have retaliated by intensely jamming it using a combination of DRM and Stanag, a modem extensively used by the military.

The result: the jamming is louder than the clandestine and spreads over the yacht race frequency. The North Koreans also similarly jam other channels of this clandestine on 6600 and 6003.

Laos is a small exotic country, wedged in between Thailand and Vietnam. It can be heard on 6130 at around 1100 and from 1130 it pops up on 7145, right in the middle of the 40-metre amateur band DX window. It is very weak and almost impossible to make out yet I am told it is a relay of FM. It has been there for some time but has been inaudible due to the presence of other broadcasters. These have now departed but Laos is still there but now upsetting amateurs. Laos as you may surmise does not have amateurs.

I hope that you enjoy monitoring over the Christmas New Year break and hope the Sunspots will return soon.

All the best from Robin VK7RH.

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tts systems

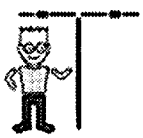


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T-boom Yagis

Barry Miller VK3BJM

This article provides very detailed, indeed quite specific, instructions on how to fabricate a multi element VHF Yagi, in this instance for 1296 MHz. While being quite specific in measurement detail and construction techniques for the frequency chosen, the methodology could be applied to a very wide range of amateur (and non-amateur) antennas.

As antenna design and construction is one of the last widely utilised areas of building for a great many amateurs, it provides a solid plan, and common sense principles, to complete a 'first-class' product.

Introduction

About a year ago, I started considering increasing the size of my 1296 MHz antenna. I currently use a home-brew 39-element DL6WU-design Yagi.

It was designed using the Microsoft® Excel spreadsheet created by David Tanner VK3AUU in SuperCalc and translated to Excel by Peter Freeman VK3KAI. I used 12 mm box-profile aluminium for the boom material, and 4.74 mm aluminium tube for all the elements (except the driven element, which was 3.175 mm copper tube). I also wanted to build a couple of Yagis scaled for use with my 1090 MHz ADS-B receiver.

I was aware that, at 4.74 mm, the diameter of element material was larger than ultimately desirable for 1296 MHz, and that it would also be preferable to reduce the cross-section of the boom material. Finding small element material was, well, elementary... Aluminium TIG welding rods are available in a couple of suitable diameters; it was easy to obtain 2.5 kg of 1000 mm long rods, of 2.4 mm diameter. Brass rod of the same diameter would be used for the driven element (a folded dipole). Wondering how best to approach the boom issue, I asked about...

Theory

One person I asked was Gordon MacDonald, nee VK2ZAB, till recently VK3ACC and currently VK3EJ. Gordon mentioned an idea he had had a few years earlier, but had never acted upon: that of using "Tee" profile aluminium as boom material.

"Tee" profile looks, in cross section, like the letter T. The idea was to turn the material upside down, and mount the elements through the top of the upright portion of the T (within a millimetre of the top). With the element in its final position, the top of the boom would be punched down using a cold chisel, holding the element firmly in place – full metal-to-metal contact.

The "Tee" profile chosen for this project has a wall thickness of 3 mm, and the "upright" and "base-plate" portions of the T measure 25 mm (refer Diagram 1: Tee Profile). It is available in lengths up to 6.5 m long from Capral, and should be available elsewhere in shorter (2 m) lengths. The Capral Product Code for this profile is currently 841506, though it used to be called "E20193MF605400" in the old Capral "Little Blue Book".

This article is to document how I implemented Gordon's idea.

Tools

Firstly I will run through the list of tools I used in making this Yagi. You may not have all of these available but, whilst this is what I used, others may be substituted.

For cutting the element material to length:

- 150 mm vernier callipers
- 300 mm steel ruler
- Fine tip permanent marker
- Cable shears
- Small mill bastard file

For marking, cutting and drilling the boom:

- Scriber
- Centre punch
- Hammer
- Ruler or tape measure
- Marking gauge
- Try square
- Drill (preferably a drill press)
- 2.5 mm drill bit
- 16 mm drill bit
- Hacksaw
- Small round file
- M3 x 0.5 tap
- Tap wrench

For fitting the elements:

- Cold chisel
- Soldering iron

Materials

- 25 x 25 x 3 mm "Tee" profile for boom material
- 2.4 mm aluminium TIG welding rod
- 2.4 mm brass rod
- N socket – with four hole flange
- 4 x M3 x 0.5 mm machine screws, with split or external star washers, preferably stainless steel
- UT-141 or QF-141 for 4:1 balun
- Epoxy resin (Araldite™)
- Solder

Construction

As mentioned in the Theory section, this article is to document a method – not an antenna design. For this example, I made use of the VK5DJ Yagi Calculator, which produces dimensions based on the DL6WU design, to produce a 10-element Yagi for 1296.150 MHz. Feel free to use whatever design you like, but be aware that you are **experimenting!**

Firstly, cut the passive elements to length from the aluminium rod; and cut the driven element to length from the brass rod. Mark the rod with either the scriber or a fine tip marker, and cut using the cable shears. Check the length with the Vernier callipers and, if a little long, use the file to reduce to the desired

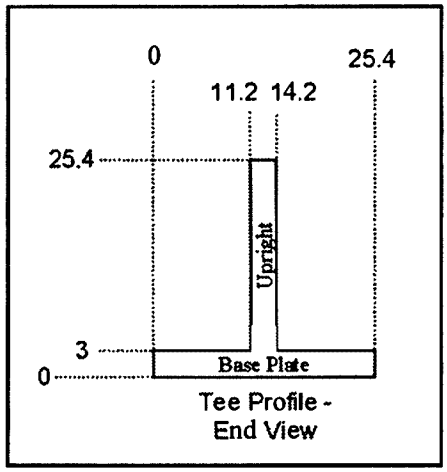


Diagram 1: Tee profile – end view.

length. (Using this method, I found it easy to make near-to square ends when cutting with the shears; and length was within 0.5 mm of the desired figure. This was handy when cutting the 196 passive elements for my new four-Yagi array – an exercise that only took four hours in total – and practice does make perfect...)

Secondly, cut your boom material to the required length.

Next, use a ruler/tape measure, the try square and a scriber to mark the position of all the elements, with a scored vertical line on the "Tee" upright.

In order to suit the 2.4 mm element material, I decided to centre the 2.5 mm element mounting holes 2 mm down from the top of the "Tee". This leaves 0.75 mm of boom material to "punch down". Using the marking gauge (or a ruler) mark a line parallel to the top of the "Tee", 2 mm down from the top, over each of the element position marks.

Then use the centre punch to make a small locating mark for the drill hole – do this for all the elements *except* the driven element.

Now, and with the boom clamped firmly, drill the holes for all the passive elements with a 2.5 mm drill bit, using kerosene as the drill bit lubricant/coolant.

Once you have drilled the holes for all the passive elements, it is time to prepare the boom for the active element – the driven element assembly. This involves removing a portion of the "Tee" upright; and drilling clearance and mounting holes for a flanged N socket.

Using the try square, mark a line on the "Tee" upright; it should be 5 mm towards the driven element location from the reflector location. Also mark a line 5 mm towards the driven element from the first director. Refer Diagram 2: Side View.

Turn the boom over and, using the ruler and the try square, mark the location of the driven element. This is done by marking a line across the "Tee" base-plate, then mark the centre of this line. Use the centre punch to make a locating hole at this spot.

Next thing to mark are the four locating holes for the flanged N socket. See Diagram 3: Top View, for measurements for the lines to be marked. Once marked, centre-punch these four spots.

For the Yagi I have built, I tapped these four holes to suit M3 x 0.5 mm machine screws; this meant drilling the four holes using a 2.5 mm bit, to suit the M3 tap. You do not have to do this, if you are not confident about tapping holes. The alternative is to drill the holes using a 3 or 3.5 mm bit, and use M3 nuts and split washers with the bolts. Drill the four holes using whichever size bit you decide on; use the same bit to drill a pilot hole for the body of the N socket.

At this point you have a choice as to the order you proceed; you can drill the clearance hole, and then remove the portion of "Tee" upright, or you can remove the portion of upright first then

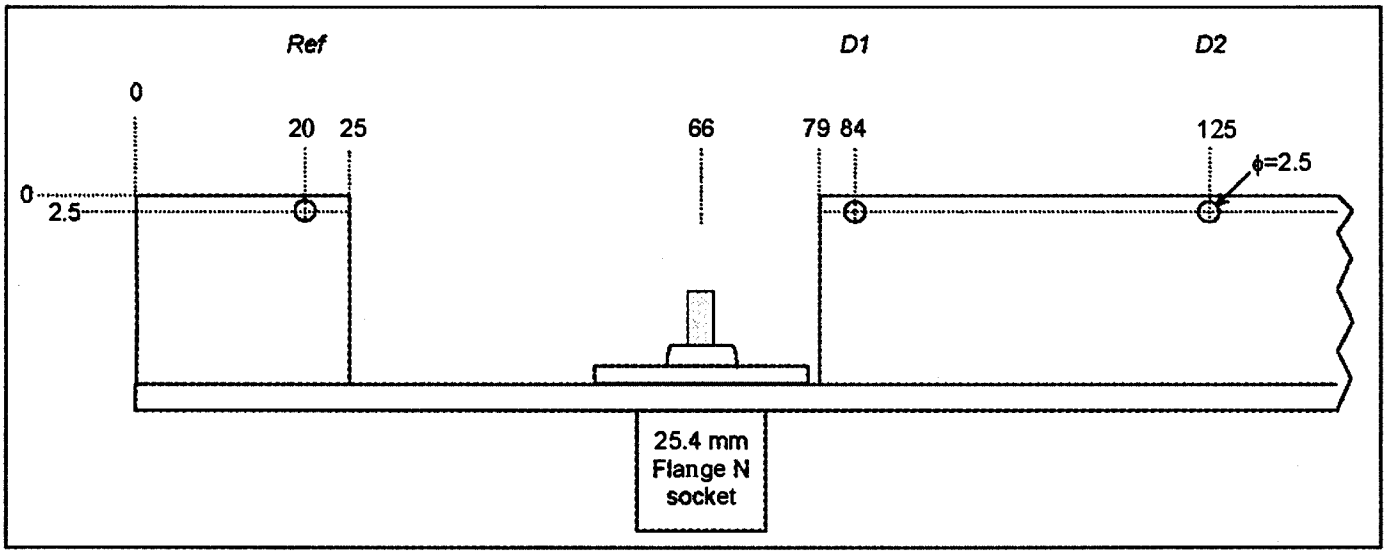


Diagram 2: Tee profile - Side view.

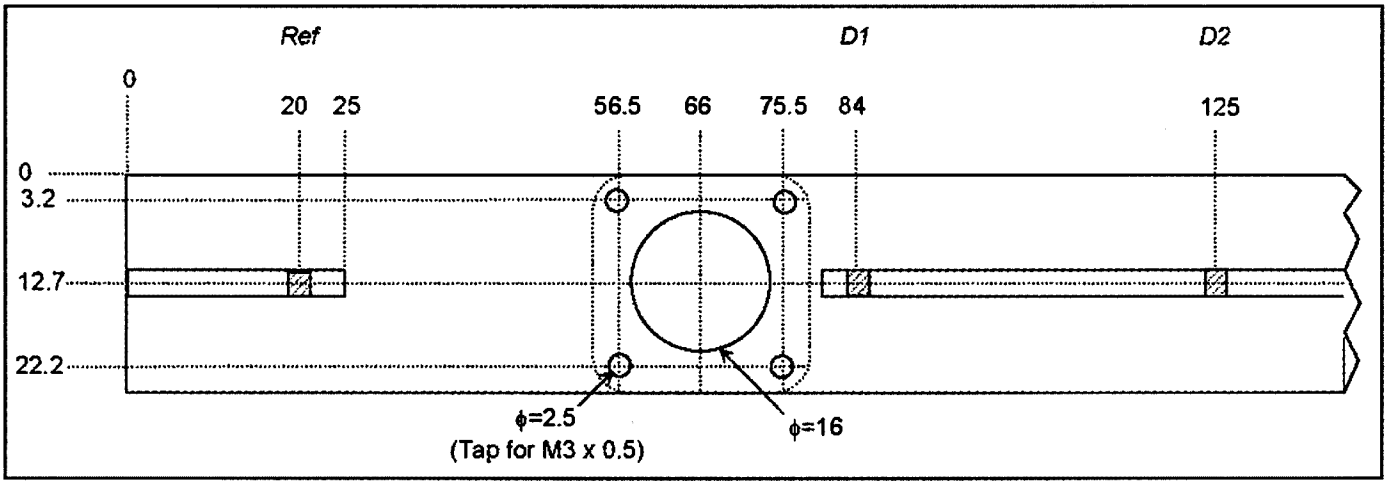


Diagram 3: Tee profile – Top view.

drill the clearance hole. I chose to drill first, as keeping the "Tee" upright intact maximises the strength of the boom whilst drilling the hole, which is quite large. Of course, if you do not have a 16 mm bit, you can use the largest bit you have and then use a file to enlarge the hole to the required diameter.

If you have chosen to drill the hole first, do so. Once done, turn the boom over, and use a hack saw to cut down the lines marked between the reflector and first director. Continue with the hacksaw and a mill bastard file to remove the "Tee" upright portion; refer to Diagram 4: Cut View, for a visual description of how I did this. Clean up the area around the clearance and mounting holes. Take the N socket and check that it fits, and that the mounting holes line up. If you decided on tapping the mounting holes on the boom, do this now.

Finally, before fitting any of the elements, there is the matter of a boom/mast mount to attend to. To some extent, the mount arrangement will have to be personalised to suit your mast arrangement. What I will describe is the basic mount design I have used in an H-frame configuration – it has also proved suitable for the 1090 MHz ADS-B Yagi, which is vertically-polarised. For a single, horizontally-polarised Yagi, modifying this design to create a single, small, "trombone"-style mount is a relatively simple task. (See Photo 1)

For long boom Yagis, I attached a length (1000 mm) of 25.4 mm square profile tube to the base plate. This tube is placed so that the middle of the length is over the balance point of the Yagi.

Of course, as the Yagi has not been fitted with all the elements, finding the true balance point is difficult! However, as there is very little weight in the Yagi anyway, not having the balance point exactly right should not cause any structural hazard. You can estimate where the point should be, or you can place the elements temporarily in the mounting holes for a more accurate idea. I drilled four 5 mm holes through the square profile tube. Another four 5 mm holes were drilled through the "Tee" base-plate. Four M4 x 35 mm bolts are passed through the base-plate and the square profile, to secure the two together.

I then cut two pieces of 3 mm aluminium sheet, in the shape of a right angle triangle. The two legs of the triangle should be 180 mm, giving a hypotenuse of 255 mm. Refer to Diagram 5 Boom-Mast Bracket for dimensions and bolt-hole locations. Diagram is on page 35

Another length of 25.4 mm square profile is cut to be the outrigger arm – it could be cut to whatever length suits your application, but in my diagram it is shown as 300 mm long. Again, the diagram shows dimensions and locations for these bolt-holes. Two M4 x 35 mm bolts are passed through the triangular plates and the square profile supporting the boom. Another two M4 x 35 mm bolts are similarly passed through the plates and the outrigger arm. Two holes would also be drilled through the opposite end of the outrigger arm, to hold a U-bolt which would clamp to your mast. The hole-size for the U-bolt depends on the U-bolt you have available!

You can now fit the passive elements. The dimension provided by the VK5DJ calculator includes an insertion length – the distance between the element tip and the point on the element where it emerges from the boom. Mark this point on each element, using a fine permanent marker, and insert the element into the appropriate hole. When the element is in to the correct depth, place the cold chisel above the mounting hole, and hit it down



Photo 1: The Boom/Mast Bracket.

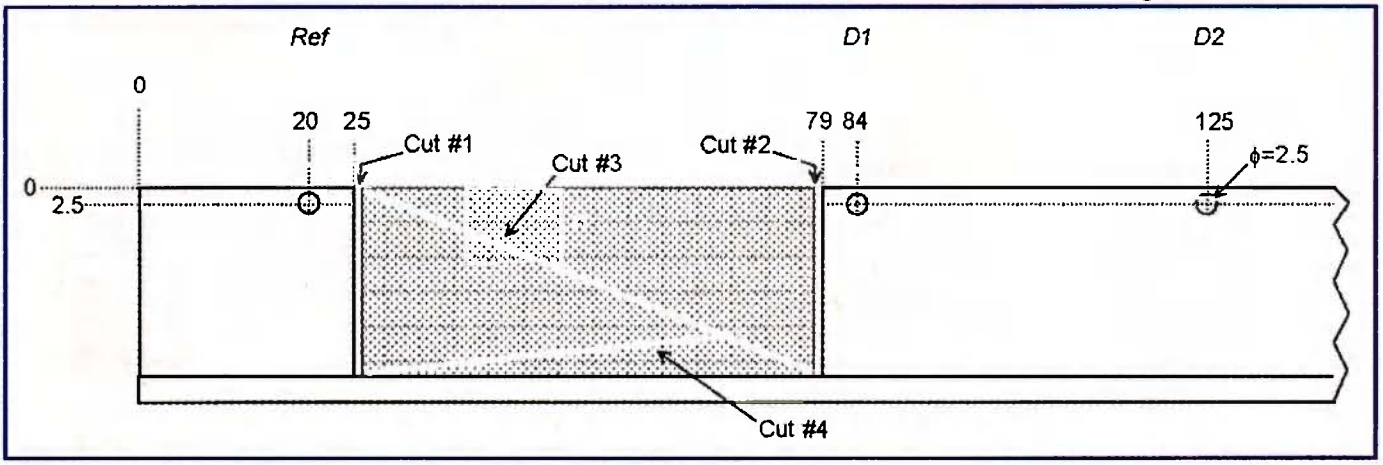


Diagram 4: Tee profile – the cut view.

with the hammer – this needs to be a firm tap, but don't go berserk; it is aluminium, not steel! Through trial and error, I found the best results were obtained by making two hits per element; one from each side, holding the cold chisel at a 45° angle.

If the element holes have been drilled squarely and cleanly, when the elements are punched down they should sit inline and square to the boom.

Next is the construction of the driven element assembly (See Photo 2).

The VK5DJ Calculator provides all the dimensions for cutting and bending to shape a folded dipole. The dipole material used was 2.4 mm brass rod; the gap at the feed-point was 3 mm and the bend radius was 4.5mm. I used a 9 mm drill bit as a bending former. Cut the brass rod to length; file square the ends and clean about 5 mm of each end of the rod with steel wool or fine grit sandpaper. Mark the rod as per the directions and dimensions provided by the VK5DJ calculator, and fold the rod to shape.

The half wave 4:1 Balun is made from UT-141 hardline (though semi-flex QF-141 could be used and would be easier to form) and for 1296 MHz is 81 mm long (end-of-shield to end-of-shield) plus leads (allow 10 mm of inner at each end). Refer Diagram 6: Balun. Once cut to length, the hardline needs to be formed into a "U" shape, with the gap between the inside faces of the shield ends measuring about 5 mm. Check that the Balun, together with the N socket, will actually fit into the gap cut in the boom. If it does not, reshape the Balun so that it does fit, or enlarge the gap a little.

Now for some soldering! Tin the two sides of the feed-point. Also tin about 5 mm of each end of the hardline Balun shield, and the exposed inner. Finally, you need to tin the centre "pin" of the N socket, along with a section of the rear of the flange.

Holding the dipole in position, solder side "A" of the feed-point to the centre pin. Take the Balun and solder the shield to the flange; the Balun needs to be positioned so that the inners can be bent in a curve up to the feed-point. When the shield is soldered in place (and the flange has cooled suitably!) bend the Balun inner tips up to meet the feed-point. Solder the inner tip that connects to side "B" of feed-point ***first*** (that is, the feed-point that is not connected to the centre pin). When that has cooled, bend the other inner tip towards the centre pin/feed-point junction, and solder it, too.

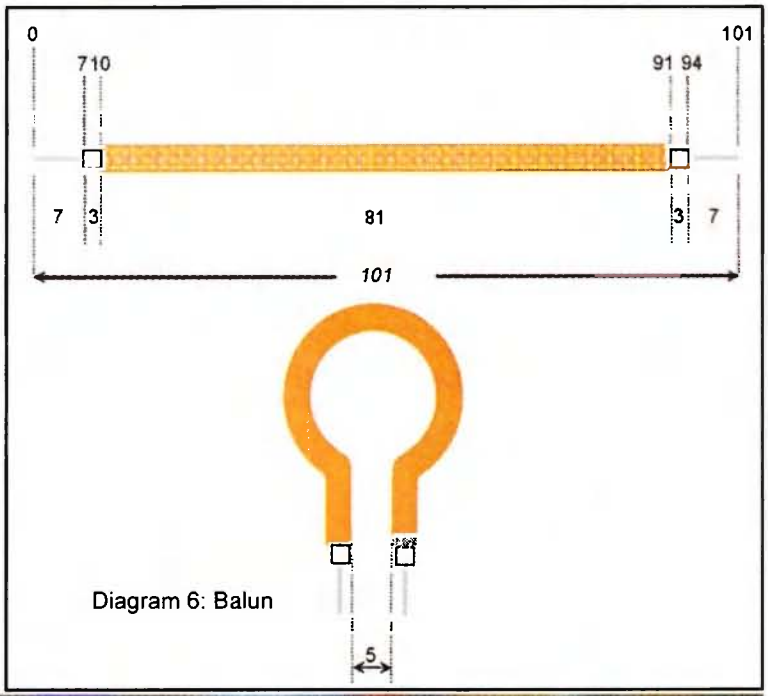


Diagram 6: Balun


Photo 2: Driven Element Assembly


Photo 3: Fitting the Driven Element Assembly

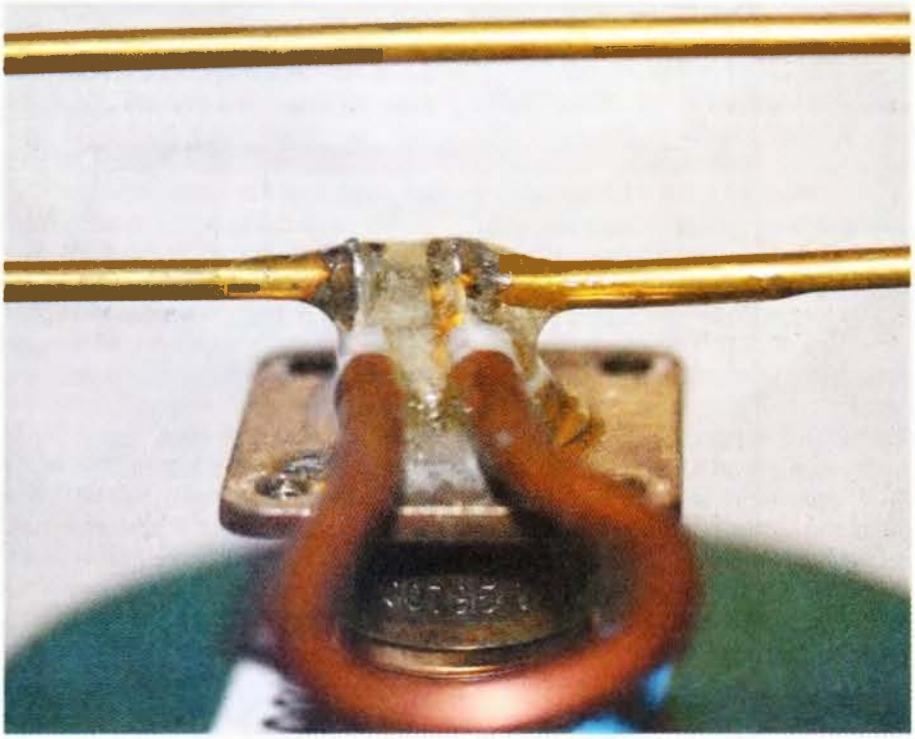


Photo 4: (above) Epoxy weatherproofing



Photo 5: (below) Finished!

When you are happy with how the assembly looks and the quality of the solder joints, you can place the assembly on the boom, and bolt it down using the M3 bolts. Use either split or star washers, or a thread-lock liquid (such as Loctite®) to ensure the bolts don't work loose (See Photo 3).

A quick test should be performed on the antenna; if you are happy with the Return Loss, or VSWR, the Balun ends/Feed-point/centre pin area should be coated with a suitable epoxy resin.

Araldite® proved suitable (after a blast in my microwave oven resulted in no warming of the resin), to weatherproof and add rigidity to the assembly. (See Photo 4)

Alignment and adjustment

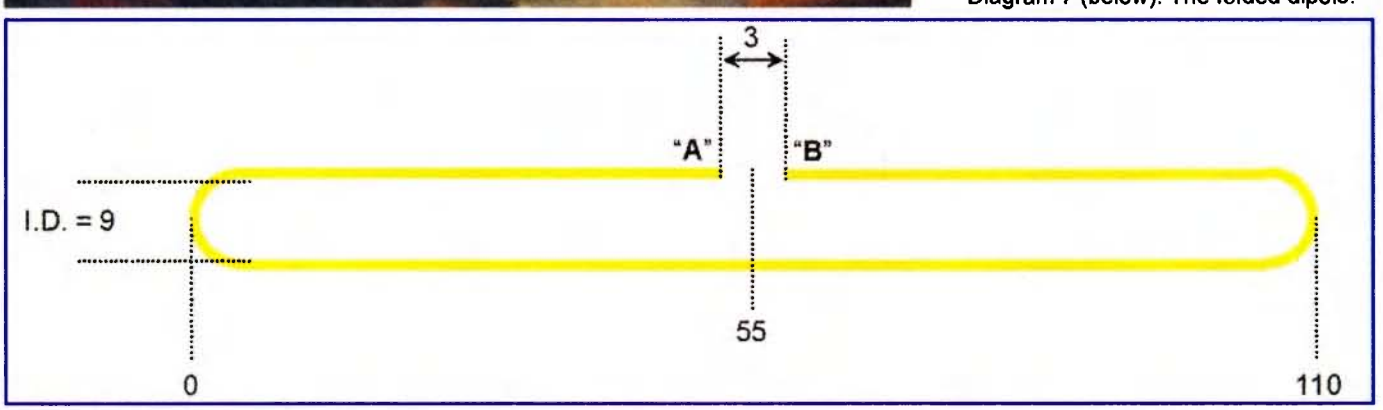
The 1296 MHz 10 element was tested at home with ye olde Revex® W-570 VSWR meter and, without any adjustment to the elements, the Yagi gave a reading of 1.3:1.

The 1090 MHz 10-element Yagi was swept with the assistance of Alan VK3XPD; with a little tweaking, a return loss of 23 dB was achieved. This tweaking amounted to a little filing of the first director ends, and tilting the driven element forward slightly.

Summary

I have built three Yagis using this method, so far. Two (one 10-element and one 28-element) are for use at 1090 MHz with my ADS-B receiver, and the third is a small 10-element "test-bed" Yagi for 1296 MHz. I have four more under construction – four 50-element Yagis to be used in an array on 1296 MHz.

Diagram 7 (below): The folded dipole.



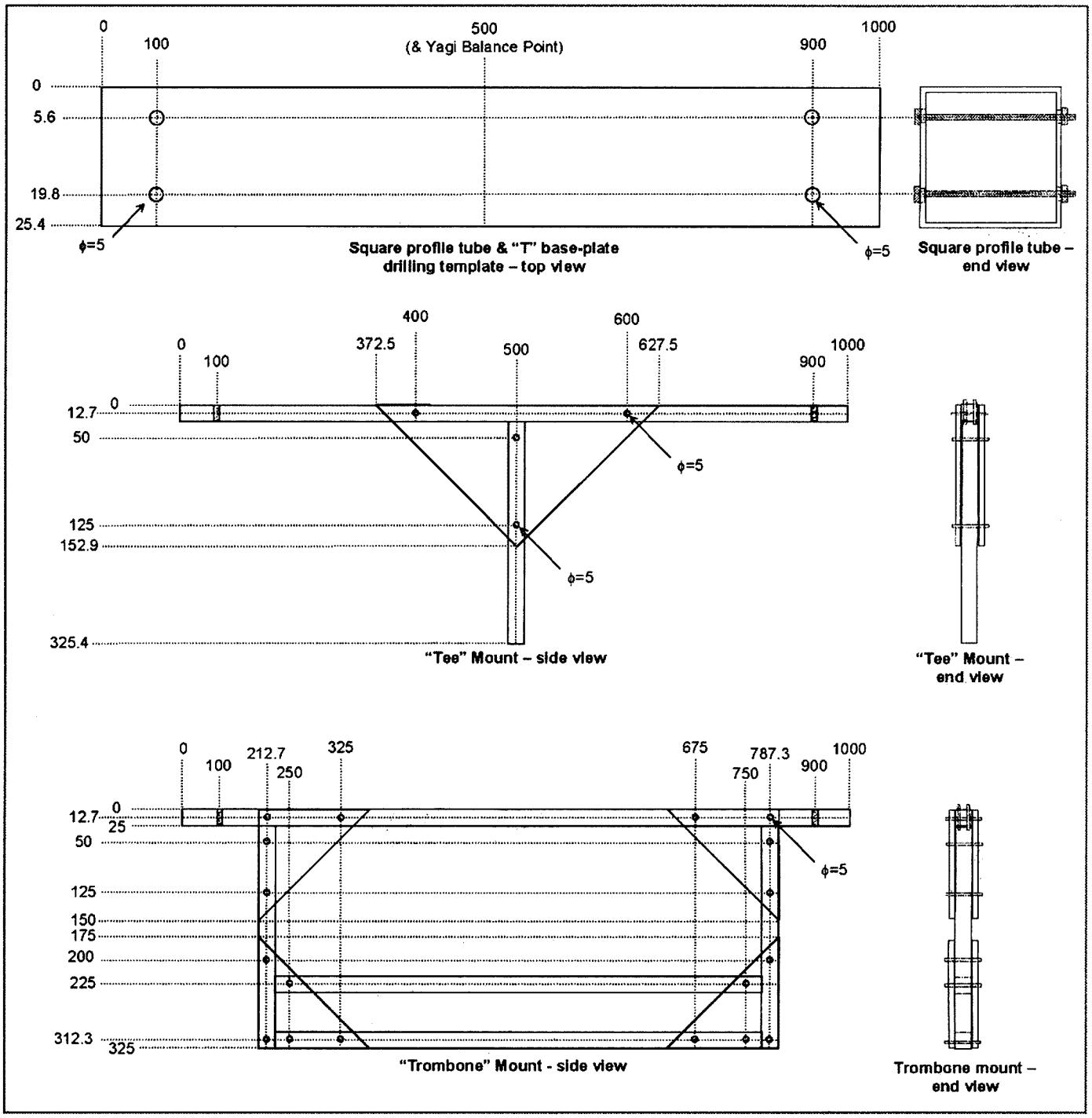


Diagram 5: The boom to mast bracket.

currently in use at the top of my tower, and is a considerable improvement over the 16-element co-linear that I was using with my ADS-B receiver.

Proper tests to establish cleanliness of the radiation pattern are yet to be performed, mainly due to lack of spare time (what's that?!) and the need to set up a suitable antenna range facility.

That said, day-to-day use of the 1090 MHz 28-element Yagi suggests a good pattern.

The method certainly results in an antenna that is strong but light, and minimises the cross-sectional area of the boom. Use of the N socket in the dipole assembly obviously means that connecting multiple antennae together in an array involves using coaxial cable and a power divider.

I will be interested to see if anyone can come up with a method of constructing a dipole assembly that will suit connection to balanced feed-line.

I would like to acknowledge the following for various ideas and assistance in getting to this point: Gordon MacDonald VK3EJ, John Drew VK5DJ, Jim Klitzing W6PQL, and Alan Devlin VK3XPD.

All photographs were taken by Barry Miller VK3BJM, Cameron Miller and Adrienne Walker.

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News from

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

Seasons Greetings and all the best for 2010 – the Year of Celebrations! The year opens with much local activity.

There is a suggestion that **VK2WI** will be operating across New Year's Eve and into the New Year.

The weekend of the Summer VHF/UHF Field Day 14/15th will be the operation by members of the **CCARC** from Mt. Kosciusko as reported in last month's notes. On Sunday 24th will be the **Radio Expo** conducted by the **Mid North Coast ARG** in Coffs Harbour. The first of the **Trash & Treasure** events at VK2WI will be on Sunday the 31st.

In February the **Central Coast** Field Day will be conducted by the **CCARC** on Sunday the 28th at the Wyong Racecourse with the Dinner on the evening before hosted jointly the **CCARC** and **ARNSW.**

Summerland ARC has Standard Licence theory courses planned on the weekend of 27/28 February, theory and exams on the 6/7 March with Regulations and exams on the 13/14 March. Contact Duncan VK2DLR on 02 6628 1337 or draymont@nrg.com.au Their WICEN group will be helping out at the Eden Creek Horse Enduro over the weekend of 20/21 February; May 15/16 and July 10/11. Contact John VK2JWA. Summerland having just celebrated their 50th – they have Anniversary Badges available, collect at $4 or posted $4.60. Wind and dust from recent storms wrapped a coax into the wind generator blades and shaft at their Pretty Gully repeater VK2RBR. Repairs were carried out and the antennas were changed along with other maintenance.

The last morning and evening news session from **VK2WI** for the year will be on Sunday 20 December. Then it is the summer morning only format for three weeks. Both sessions will resume on January 17. The **VK2BWI** Morse training session on Thursday evening conducted by Ross VK2ER will stop from mid December and resume on 4 February.

Also the **Hunter Radio Group** VK2AWX Monday evening news will cease after 7 December and restart 8 February. Also many radio clubs take a break from meetings in January. All clubs are asked to let **VK2WI NEWS** (news@arnsw.org.au) know of their arrangements so it can be included in the bulletins.

The **Orange & District ARC** has a venue change for their December meeting from the usual RAAF building to the SES headquarters on the 4th.

The **Manly Warringah RS** are celebrating their 75th anniversary about now. The exact formation date of the Society is not known, advised Richard VK2SKY.

They are also planning to participate in an event this month to mark the 100th anniversary of the first heavier-than-air flight in Australia, by George Taylor. That flight took place at Narrabeen on Sydney's Northern Beaches. Taylor was also a founding member of the Wireless Institute of New South Wales in 1910. Manly Warringah RS now meet at the 1st Terrey Hills Guides Hall, Beltana Ave, Terrey Hills on Wednesday at 8 pm.

Amateur Radio New South Wales has altered their telephone and email. The 1-800 Freecall number has been discontinued, but the Secretary has a mobile 0400 445 829 for direct contact. The office number 02 9651 1490 goes to a message bank which is checked usually daily. FAX 02 9651 1661. To contact the office email office@arnsw.org.au

VK2WI news submission is now news@arnsw.org.au Previous email addresses are redirected but will soon go. The VK2WI station phone during broadcast times is 02 9651 1489. The web address for the weekly news text and information about ARNSW is www.arnsw.org.au Postal address is P. O. Box 6044 Dural Delivery Centre NSW 2158. The site address is 63 Quarry Road, Dural. The Dural 'shed' fit out was completed in late October, leaving some storm water systems to be connected – then final inspection.

St. George ARS maintain the western Blue Mountains repeater VK2RDX 6650 – Mt. Bindo – and raise funds to cover the site fees. One method is a 'Christmas pie order' and these will be available at the December meeting on the first Wednesday. The **Waverley ARS** in Sydney's eastern suburbs conduct regular exams. Send an email to exams@vk2bv.org or contact Simon VK2UA 02 9328 7141. The web site is vk2bv.org

The **Mid South Coast ARC** have their next quarterly meeting in February – usually the second Saturday - at Milton.

The **Oxley Region ARC** will not have a December evening meeting and the November gathering was replaced with the annual Christmas Party. There is a general meeting on the first Saturday afternoon in December at the SES building in Central St. Port Macquarie.

The **Mid North Coast ARG** Radio Expo on Sunday 24 January 2010 will be the first major field day in VK2 in WIA's Centenary. There will be over 20 exhibitors including the trade with all major brands on display and at special Radio Expo prices. Also displays of DRM digital short wave radios, historic and vintage radios and the Elecraft range of amateur kits. There will be representatives from the WIA, ALARA and local clubs.

Full details in the advertisement on facing page.

What's in a name? **The NSW Division** has owned two properties. The first at St. Leonards on the lower north shore of Sydney - from 1959 to 1982 - was called 'Wireless Institute Centre'.

The next was at Harris Park, near Parramatta - 1982 to 2006 - and was called 'Amateur Radio House'. The Dural property which was purchased in 1955 as a 'Home for VK2WI' never developed a name of its own. Now that the 'shed' construction on the site is almost finished - will it achieve its own name?

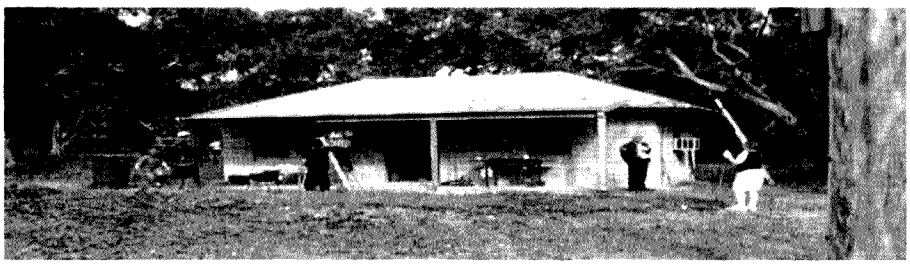
Known at intervals during its development as 'The Shed', 'A Depot' or 'A Barn' what does the future hold ?.

Seasons Greetings and all the best for 2010 – a Year of Celebration.

73 – Tim VK2ZTM.

AUSTRALIAN SCOUT JAMBOREE AJ2010

Fishers Ghost Amateur Radio Club is gearing up for the 2010 Australian Jamboree in January 4 to 14, with setting-up over the preceding week



Members of Fishers Ghost ARC tidying up the exterior of the amateur radio building at Cataract Park in preparation for the Australian Jamboree 2010.

Members have been busy upgrading the dedicated amateur radio building at Cataract Scout Park.The surrounding grounds and exterior have been tidied up and the interior has been modified into six individual operating stations.

There are at least 10,000 registrations for the Jamboree as well as over 3000 Scout Leaders. As amateur radio is an elective activity, the numbers will be about 250 per day.

Tents have also been organised in which there will be various activities and passive displays to interest the Scouts.

They expect to run all bands from 80 M to 70 cm, satellite, basic fox hunts, simple Morse code between on site venues, etc, with general activity throughout the day. Night operations will be for licensed amateur scouts and leaders.

The intention is to generate interest within the Scout ranks and provide them with information so they can study for the Foundation Licence when they get home, no matter which State they come from.

Further information can be obtained by contacting Wal Kelly on 02 4626 8423 or email vk2zwk@wia.org.au.

Fishers Ghost Amateur Radio Club, on behalf of Scouting Australia NSW Branch, would like to express their appreciation and thanks to the following for donations.

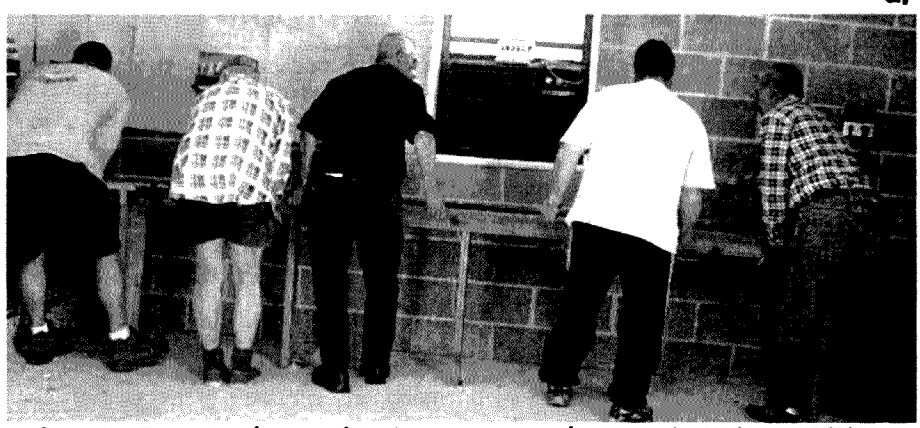
Without this assistance, the upgrade of the building would only be a wish and not a positive outcome:

Dick Smith Foods, BHP Billiton Coal & Allied, Rojone Pty Ltd, Brian's Secondhand City Campbelltown, ICOM, WIA, Bunnings Campbelltown, The General Manager of Bing Lee Campbelltown for a personal donation, CSR Insulation, Hepworths, Ted VK2AU, Ian VK2FIAN, Lynn VK2FLMK, Karl VK2HKF, Bernd VK2IA, Craig VK2KDP, Victor VK2KVH, David VK2NU, Luis VK2TAR and Wal VK2ZWK.

Thanks also to FGARC members who have willingly given their time and labour in undertaking this work.

Call sign VI2AJ2010 will be used over the period of the Jamboree and QSLs should be to VK2FFG via the WIA QSL Bureau (www.wia.org.au) or FGARC, PO Box 35N, Campbelltown Nth, NSW, 2560 (fgarc.org).

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Stage 1: Removing the old table. Can you guess who is who? VK2AU, VK2FIAN, VK2KDP, VK2TAR, VK2ZWK.

Radio Expo Coffs Harbour

Hosted by the Mid North Coast Amateur Radio Group Inc

Sunday 24th January 2010

at St Johns Church Hall Mc Lean Street Coffs Harbour

Doors Open 8.30 am Show closes 1.30 pm Over 20 Exhibits All Major Brands of radios at special show prices

Disposals Trade Displays Historic Radio Display

Emergency Services Displays Club Displays WIA - WICEN

Home Brew Live Demos Guessing Comp - Tech Quiz Kit Sales and more

Entry only $5.00 per person Under 12 Free entry Lucky door prizes every hour

Hot and cold food sales FREE TEA and COFFEE

All major displays under cover Disabled access

Talk in on local Coffs City Repeater 146.750 CTCSS 123 Hz

More Info go to www.mncarg.org or call on 02 66552990

News from VK3

Jim Linton VK3PC
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

Season's Greetings

On behalf of the Amateur Radio Victoria Council – Ross Pittard VK3CE, Barry Robinson VK3PV, Peter Mill VK3APO, Keith Proctor VK3FT, Terry Murphy VK3UP and myself, compliments of the season to all and best wishes for a Happy New Year.

A reminder that the office at 40g Victory Boulevard, Ashburton, will close at 1 pm on Tuesday 15 December and reopens Tuesday 9 February. During the break urgent matters will be given priority while office-bearers work on financial statements, stocktaking and the annual audit.

The office is primarily to process mail, membership applications and renewals, some public inquiries, keep the QSL bureau up to date and assist with membership services.

Thank you to the small but dedicated team of volunteers involved in administrative matters at the office, the VK3 QSL bureau, handling incoming mail, faxes and phone calls. The work that you do is greatly appreciated.

The Foundation Licence Training and Assessment Weekend held last month saw the Education Team clock up four years since the restructuring of the licence system.

Recently the question was asked how many new radio amateurs have passed through those weekends. Well honestly the team has lost count, there are hundreds including many who have come back and upgraded. In all around 50 assessment sessions have been held since November 2005.

Prepare for emergencies

With the beginning of summer radio amateurs are now giving thought as to how to keep their station on air in severe weather conditions that could result in power shortages, storms or fires.

This will enable them to continue to enjoy amateur radio should the power fail, but also it may assist them in learning more about summer bushfires in their area.

Last summer 'self-help' groups of radio amateurs regularly got on their local repeater to keep in touch and share information. To do this of course it is essential to have an independent power source. A diesel or petrol generator can be used to not only keep your radio on air but also give energy for lighting or other household uses.

Many seem to have a back-up 12 V battery to keep their rigs on air. These are relatively affordable if bought new and cheap second-hand. Emergency service authorities also recommend having spare batteries on hand for torches and a battery or wind-up powered broadcast receiver to keep up with the news.

So this summer have a think about how to stay on air. Amateur Radio Victoria encourages the use of the major 2 m repeaters to keep in touch, particularly on days of total fire ban.

Should WICEN (Vic) or anyone else need any repeater to pass emergency messages please give them priority, or follow the guidance of any emergency net control station on a repeater.

On the HF bands there are a number of designated Emergency Centre of Activity (CoA) frequencies. Within the Asia/Pacific Region these are 3.6 MHz and 7.110 Mz, and globally the CoA include 14.3 MHz, 18.160 MHz and 21.360 MHz. During emergency training exercises and disasters please keep them clear.

Centre Victoria RadioFest

All of the main commercial traders have given their endorsement for the major amateur radio event at the Kyneton Racecourse on Sunday 14 February.

The Centre Victoria RadioFest No. 3 is steadily receiving bookings too from second-hand sellers wanting to have a table or car-boot sales space. Club and groups are progressively indicating they want to be part of the event too with a spot in the Club Corner precinct.

Thank you to those Amateur Radio Victoria members who have volunteered to help out on the day, which will begin very early with setting up the venue, throughout the day with various tasks, then packing it all up at day's end.

The Organising Committee is putting final touches on the program of activities. It is shaping to be another very interesting and not to be missed event. For more information keep a watch on the website radiofest.amateurradio.com.au

Membership inquiries

To join and support the state-wide organisation Amateur Radio Victoria costs $30 for Full or Associate membership and $25 Concession, for two years. New members are most welcome and an application form can be found on our website or posted out on request.

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

Club Matters!

On the domestic front, the GARC club house is in the process of a substantial make over internally by virtue of the interior decoration and re-organization of the Library (cataloguing), workshop and shack but also attention has been paid to the external look of the building and landscaping the front.

This has largely been under the control of Barry VK3FWGR, organizing work groups, and Vanessa VK3FUNY and Jenni VK3FJEN.

At a recent barbeque an auction was held of items donated by club members. This proved to be a very entertaining session chaired by Chas VK3PY, assisted by David VK3QM, and raised $350 for the club coffers.

It is of interest to note that there has been a significant revival of interest in Morse code training within the club by licensed club members, no pressure now, as a result of which classes take place under the guidance of Owen VK3OWZ, between 6 and 7 pm each Friday.

For information on December activities at The GARC go to http://www.atl.org

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The 2009 Remembrance Day Contest Results.

Peter Harding VK4OD

I received a total of 310 Logs compared to 314 last year, with 1 log again for the receiving section only.

The overall points totalled 42,356 points compared to last year's total of 36,341.

I believe that we can attribute the slight drop in the number of logs to the Lighthouse Event and the RD Contest falling on the same weekend. Unfortunately, this is going to occur from time to time.

Thankfully this year, 219 of the logs were created electronically, the remainder were either hand written or on pre-designed forms that I made available. This made my task a lot easier and enabled a final result being made available quickly.

Amongst this years entrants were logs from 21 "F" calls, compared to 16 "F" call logs in 2008. Well done! We look forward to more and more "F" calls taking place.

With no logs last year, this year we had three logs in from the " Land of the Long White Cloud". Their certificates will be posted to the ZLs ASAP.

Prior to this years contest, I received a few requests for a section to be made available for operators using WWII Radio Equipment. Disappointingly, we received only two logs.

Once again quite a few of this year's entrants were from club stations running Multiple Operators, Multi Modes and Multi bands.

It is no surprise that VK6 once again will get their name engraved on the RD Trophy as the Winning State for 2009.

Well done to all those who took the time and effort to enter the contest and also posted or emailed in their logs.

By the time you read this in AR, all the Certificates will have been sent out, to all the first, second and third place getters.

Should any questions arise from this years contest, please email them to Peter Harding, c/o vk4od@wia.org.au and I will do my best to answer your query.

Until next year.

Peter Harding VK4OD

RD Contest Manager.

A complete list of results is available on the WIA website at: http://www.wia.org.au/members/contests/rdcontest/



Top Individual stations by Division

Division	Place	Callsign	Points
HF Single Op Phone	1st	VK7ZE	847
	2nd	VK4ZD	679
	3rd	VK4VCH	626
HF Single Op CW	1st	VK4SN	138
	2nd	VK4WM	130
	3rd	VK2BHO	106
HF Single Op Open	1st	VK7GN	843
	2nd	VK2AYD	433
	3rd	VK3HJ	349
HF Single RX Only	1st	VK6ABM	75
HF Multi Op Phone	1st	VK2WIA/P	784
	2nd	VK6NC	760
	3rd	VK1ACA	578
HF Multi Op Open	1st	VK2AWA	1011
	2nd	VK3BJA	440
	3rd	VK4WIS	346
HF WWII Single Op Phone	1st	VK2ABN	94
	2nd	VK3IZ	5
VHF Single Op Phone	1st	VK6USB	700
	2nd	VK6FDX	558
	3rd	VK6KHZ	409
VHF Single Op Open	1st	VK6BDO	612
	2nd	VK6PIG	606
	3rd	VK6WB	493
VHF Multi Op Phone	1st	VK5HZ	303
	2nd	VK6SH	205
	3rd	VK3BJA	183
VHF Multi Op Open	1st	VK6BDO	612
	2nd	VK6PIG	606
	3rd	VK6WB	493

News from VK7

Justin Giles-Clark, VK7TW
Email: vk7tw@wia.org.au

Central Highlands Amateur Radio Club of Tasmania

The Central Highlands Amateur Radio Club member of the year award has been awarded to John VK3MGZ.

The award is passed from the previous recipient to a member who has done something outstanding, or has shown up on the net regularly during the past year.

The club runs a weekly quiz net on 3.585 MHz on Thursday evening at 8.30 pm. Anyone is welcome. Check in time is between 8.15 and 8.30 pm. The quiz is run by the winner of the previous quiz. Thanks Claureen VK3KMB for this news



Claureen VK3KMB presenting the award to John VK3MGZ.

Northern Tasmania Amateur Radio Club

The October dinner presentation by Brendan McMahon from the Bureau of Meteorology was fascinating. A big thank you to David VK7YUM and XYL Norma VK7FOOD for the basket of goodies from Lollydale which was won by Shirley VK7HSC.

The author attended an NTARC coffee morning at Cafe Lo Ena and caught up with many old friends from the North.

Jamboree On The Air in VK7

JOTA activity this year was in the North and NW of VK7 with Peter VK7KPC assisting with the Perth JOTA station, making contacts with ZL and VK.

The other station in the North was by Tony VK7YBG at Carnacoo. A big thank you Peter, Tony, XYL Anne VK7FYBG, Wayne VK7XGW, Peter VK7PL and XYL Lois for the great scones!

In the North West the group at the Burnie Scout Hall had great contacts to ZL and ito Africa. Thanks to Bob VK7MGW, Lucas VK7FLSB, Dave VK7DC, Kirby VK7KC and Graham Anderson for their help.

Paton Park at North Motton had busy IRLP and EchoIRLP nodes and contacts all over VK. Thanks to Ivan VK7XL, Neil VK7ZNX and Steve VK7ZSJ.

The third NW JOTA location was Camp Boomerang at Port Sorell and HF and IRLP Nodes were running hot along with APRS demonstrations from Jim VK7JH.

Thanks to Jim, Ron VK7RN, Andrew VK7XR, Steve VK7ZSJ and Tony VK7AX for assistance with this JOTA station.

WICEN Tasmania (South)

The WICEN end of year lunch and thank you to our XYLs is December 12 at the Riverview Inn in Lower Sandy Bay. Contact Rod VK7TRF, or any WICEN member if you would like to join us.

North West Tasmanian Amateur TeleVision Group

The NWTATVG WIA affiliation certificate is here and on the club's website. Christmas Dinner is on Wednesday December 9 at the Bass & Flinders Restaurant, Ulverstone, 6.30 pm for 7.00 pm start. All welcome, please let the committee know if you are coming.

Cradle Coast Amateur Radio Club (CCARC)

Our newest Foundation licensee is Scott VK7FTTT. The CCARC Inaugural Christmas Dinner/ Social Evening will be at the Best Western Bass & Flinders Convention Room, Eastland's Drive East Ulverstone on Saturday December 5 from 6:00 pm for a 7:00 pm start. All welcome and please RSVP to the committee .

Radio and Electronics Assoc. of Southern Tasmania

We occasionally have a very special guest along to our ATV Experimenter's nights. On October 14 Ken VK7DY brought along Gary Briant VK3KYF, President of the Sunraysia Radio Group based in Mildura. Gary was interviewed on ATV.

The ATV Group have taken delivery of the new 70 cm DVB-T DATV transmitter components and this is currently being housed in a suitable rack box along with the power amplifier. We are also finishing the new ATV studio and wil soon be up and going in the new studio.

The REAST Saturday Afternoon Groups are happening again over this summer thanks to Tony VK7FTCL, so keep your eye on the VK7 Regional Broadcast and REAST website. Harvey VK7TED has been very active with Ham Radio Deluxe with PSK31 and the PSK-reporter application. Harvey's catch phrase has been "Who said propagation was down?"...HI HI **ar**



Ken VK7DY interviewing Gary VK3KYF on ATV

SILENT KEY - VK7TS
appears on page 52

Ross Hull Memorial VHF-UHF Contest

John Martin VK3KM
Contest Manager

The next Ross Hull Contest will run through the month of January 2010.

Logs will be due by Monday, February 15.

Last year's experiment with a locator based scoring system resulted in a number of comments and a clear indication that there should be a return to distance based scoring.

It has also been suggested that the scoring restrictions for 6 metres should be dropped, at least while we are still in the low part of the solar cycle.

So this year the scoring system returns to the pre-2009 pattern. The band multipliers remain unchanged, except that the multiplier for 6 metres has been increased.

The scoring will be based on the best seven UTC days nominated by the entrant. The length of the contest period should allow everyone to find enough free time to spend in the shack. Entrants can take advantage of band openings during the contest period, while still have time off for other activities or commitments.

In past years some entrants have felt that it is necessary for them to operate on every contest day, otherwise how will they know whether each day could have been one of the best seven? The answer is that there is no need to punish yourself! There will be two good contest days on January 16 and 17, the weekend of the Summer VHF-UHF Field Day.

And any day when there is an opening will be an obvious candidate to be one of the best seven. So, the technique is to just operate as you normally would, but with a better than usual effort on days that are shaping up well.

If you are unable to operate on as many as seven days, give it a try regardless. It could well turn out that your best five days could beat someone else's best seven.

The Contest

The WIA maintains a perpetual trophy in honour of the late Ross A. Hull and his pioneering achievements in VHF and UHF operation. The name of each year's contest winner is engraved on the trophy, and other awards may be made in the various divisions of the contest. The contest is open to all amateurs.



Duration

0000 UTC January 1, 2010 to 2400 UTC January 31, 2010.

In Eastern Summer Time, that is 11 a.m. on January 1 to 11 a.m. on February 1

Sections

A: All bands, non-digital modes.

B: All bands, digital modes.

Digital modes are defined as those in which the decoding of the received signal is done by a computer.

Entrants may submit logs for one or both sections.

General Rules

One callsign and one operator per station. Stations may operate from any location. You may claim one contact per station per band per UTC day.

Repeater, satellite and crossband contacts are not permitted. No contest activity is permitted below 50.150 MHz. Recognised DX calling frequencies should be avoided where possible for contest activity.

Suggested procedure is to call on .150 on each band, and QSY up to make the contest exchange. All rulings of the contest manager will be accepted as final.

Contest Exchange

For Section A, Entrants must exchange RS (or RST) reports plus a serial number. Serial numbers need not be consecutive. *For propagation modes such as meteor scatter or short-lived sporadic E openings, it is sufficient to exchange callsigns plus two further digits that cannot be predicted by the other station.*

For Section B, exchange callsigns plus two further digits that cannot be predicted by the other station.

While not an essential part of the contest exchange, Maidenhead locators may also be exchanged as an aid to distance calculations.

Logs

Logs must contain the following for each contact:

Date and UTC time.

Frequency and callsign of station worked.

Reports and serial numbers sent and received.

Approximate location or grid locator of station worked.

Separate scoring columns for each band would be helpful.

Scoring

Scoring will be based on the best 7 UTC days nominated by the entrant.

For each contact, score 1 point per 100 km or part thereof (i.e. up to 99 km: 1 point, 100 – 199 km: 2 points, etc.)

Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher bands
x 2	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Cover Sheet

Logs must be supplied with a cover sheet containing:

- Operator's callsign, name and address.
- Station location (if different from the postal address).
- Section(s) entered.
- A scoring table set out as the example below.
- A signed declaration that the station has been operated in accordance with the rules and spirit of the contest, and that the contest manager's ruling will be accepted as final.

Please use the format shown at right for your scoring table. If you wish you can cross-check by adding the daily totals across the table, but please make sure that you include the separate band totals.

A cover sheet and scoring table has been included in the postings on the WIA web site. Copies can also be obtained from the e-mail address given below.

Penalties

Minor errors may be corrected and the score adjusted. Repeated use of recognised DX calling frequencies (especially when the reports indicate strong signals) may lead to disqualification. Inclusion of any false log entries will lead to disqualification.

Entries

Paper logs may be posted to the Manager, Ross Hull Contest, 3 Vernal Avenue, Mitcham, Vic 3132. Electronic logs can be e-mailed to vhf-contests@wia.org.au Acceptable log formats include: ASCII text, RTF, DOC, XLS, MDB or any Open Office format.

Logs must be received by **February 15, 2010**. Early logs would be appreciated.

Note on Calculating Distances

Absolute accuracy is not required. You just need to know whether each station is above or below the nearest multiple of 100 km, so you can use a compass to draw 100 km circles around your location on a map.

A more accurate method is to use six-digit Maidenhead locators and a computer program that can be obtained from the WIA web site.

A sample of the Summary sheet, including scoring table, is on the Contests section of the WIA website.

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Date	6 m	2 m	70 cm	23 cm	etc		
Day 1	xxx	xxx	xxx	xxx	xxx		
Day 2	xxx	xxx	xxx	xxx	xxx		
Day 3	xxx	xxx	xxx	xxx	xxx		
Day 4	xxx	xxx	xxx	xxx	xxx		
etc.							
Total	*xxx* +	*xxx* +	*xxx* +	*xxx* +	*xxx*	=	xxx (GRAND TOTAL)

TET-EMTRON

Antenna Manufacturers

New Tet-Emtron Vertica Range

- All Aluminium with Stainless steel hardware.
- No adjustment needed to main antenna.
- Light.
- Free standing—no intrusive guy wires.
- 1 kW PEP power rating.
- Can be ground mounted or elevated.

The new TET-Emtron Vertical range is designed with ease of use in mind. Tuning is done by the radials when the antenna is in its final position (where possible).The radials can either lie on the ground, be buried or hang fr elevated antenna. The antenna comes with a set of radials that has a

TET-Emtron will be closed during the month of December due to the move of the factory from Victoria to WA. We will still take your calls and your orders, but production will not be up and running again until January. We apologise for any inconvenience. Stay tuned for new models and products in the New Year. Merry Christmas

40 Blackburn Street
STRATFORD
Victoria 3862 AUSTRALIA

Ph: 61 3 5145 6179
Fax: 61 3 5145 6821
ABN: 87404541761

www.tet-emtron.com
Email: rawmar@hotkey.net.au

Antenna	TEV-4	TEV-3	TEV-3 WARC
FREQUENCY	7, 14, 21, 28 MHz	14, 21, 28 MHz	10, 18, 24 MHz
ELEMENT HEIGHT	4090 mm	3800 mm	5025 mm
FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	10.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

Summer VHF-UHF Field Day 2010

John Martin VK3KM

Saturday and Sunday 16 and 17 January 2010

Logs must be received by Monday, 1 February 2010.

Duration in all call areas other than VK6:

0100 UTC Saturday to 0100 UTC Sunday.

Duration in VK6 only:

0400 UTC Saturday to 0400 UTC Sunday. Please note that there is now a 3 hour difference between the eastern states and Western Australia, because daylight saving time no longer applies in WA.

Sections

A: Portable station, single operator, 24 hours.

B: Portable station, single operator, 8 hours.

C: Portable station, multiple operator, 24 hours.

D: Portable station, multiple operator, 8 hours.

E: Home station, 24 hours.

Entrants may enter more than one section.

Operating periods:

Stations entering the 8 hour sections may operate for more than 8 hours, and select which 8 hour period they wish to claim for scoring purposes.

If a station operates for more than 8 hours, it may enter both the 24 hour and 8 hour sections.

If the winner of the 24 hour section has also entered the corresponding 8 hour section, his log will be excluded from the 8 hour section.

Two operators:

If two operators set up a joint station with shared equipment, they may choose to enter Section A or B as separate stations under their own callsigns, or Section C or D under a single callsign. If they enter Section A or B, they may not claim contacts with each other.

Multi-operator stations:

Stations with more than two operators must enter Section C or D.

Operators of stations in Section C or D may not make contest exchanges using callsigns other than the club or group callsign.

General Rules

One callsign per station.

Operation may be from any location.

A station is portable only if all of its equipment is transported to a place which is not the normal location of any amateur station. Stations may change location during the Field Day provided the station is dismantled and reassembled each time it moves.

You may work stations within your own locator square. Repeater, satellite and crossband contacts are not permitted.

No contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for contest activity. Suggested procedure is to call on .150 on each band, and QSY up to make the contest exchange.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator.

The Maidenhead locator is optional if it has already been exchanged in a previous contact during the Field Day and neither station has moved since then.

Repeat Contacts

Stations may be worked again on each band after three hours. If the station is moved to a new location in a different locator square, repeat contacts may be made immediately.

If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Logs

Logs should cover the entire operating period and include the following for each contact: UTC time; frequency; station worked; serial numbers and locator numbers exchanged.

Scoring

For each band, score 10 points for each locator square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Cover Sheet

The cover sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section(s) entered; the scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Please use the following format (foot of page) for your scoring table. In this example the operator has operated from one locator and worked four locators on each band:

A blank cover sheet, with scoring table, is available on the Field Day page of the WIA web site.

Entries

Paper logs may be posted to the Manager, VHF-UHF Field Day, 3 Vernal Avenue, Mitcham, Vic 3132.

Electronic logs can be e-mailed to vhf-contests@wia.org.au. Acceptable log formats include: ASCII text, RTF, DOC, XLS, MDB, or any Open Office format.

Band	Locators Activated (10 points each)	+	Locators Worked (10 points each)	+	QSOs (1 point each)	x	Multiplier	=	Band Total
6 m	10	+	40	+	40	x	1	=	90
2 m	10	+	40	+	30	x	3	=	240
70 cm	10	+	40	+	20	x	5	=	350
etc.									
Overall Total								=	680

Logs must be received by Monday, 1 February 2010.

Early logs would be appreciated.

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DX - NEWS & VIEWS.

John Bazley VK4OQ
E-Mail: john.bazley@bigpond.com

Well it is indeed great to see the sunspot count starting to rise again, let us hope that this time it will prove to be the beginning of the next Solar Cycle.

If this proves to be correct, then we can look forward to a New Year of greatly improved DX possibilities.

Before detailing some of the forthcoming operations it is good to see that the following have been approved for DXCC credit.

TX3A - **Chesterfield Island** - 2009 operation, K4M (KH4 Midway), 3D2ØCR - **Conway Reef and 3D2CV - Conway Reef 2009** Operation, T6AB - **Afghanistan** - 2008 and 2009 operation, T6AF - **Afghanistan** - current operation, credit for YI/KV4EB has been extended through 9 January 2004 (originally it covered the period from 20 April to 28 November 2003), the recent FT5GA operation from **Glorioso**, 5N0OCH (**Nigeria**, current operation) and 5N0EME (2009 operation) and finally the current operation by D2QMN.

So now to DX.

Good to see that TL0A, Chris is active again after a holiday in France, and an opportunity to catch up with QSLs (see photograph of his current QSL below). He can usually be found, most days, on 17 m or 20 m SSB.

John 3B9/G3LZQ is making plans for the annual RSGB Commonwealth Contest which takes place in March 2010. It will also be a serious vacation to **Rodrigues Island** with some amateur radio being an important part of the trip. He will be staying at the Cotton Bay Hotel (which was the site of the March 2004 3B9C DXpedition and the operation by Nigel G3TXF in February 2007) between March 3rd and April 2nd 2010.

Activity outside the contest will be focused on the low bands, provided the QRN is manageable. John has applied for the call 3B9/G3LZQ. His equipment will include a K3 and Expert IK-FA Amplifier plus two 18 metre and two 12 metre Spider Poles and four lightweight 10 metre fibreglass poles to "accommodate" his top loaded 160 metre vertical, 80 metre vertical, and a pair of verticals for 40 metres.

On the high bands John will have a Spider Beam and 10 metre mast. Plans are to have all of the antennas erected very close to the ocean. For receiving he hopes to have at "least one beverage" and a "dual K9AY loop".

John is planning to be on the air daily during his sunrise and sunsets (0145 Z and 1345 Z) and occasionally during his daytime. He is hoping to be able to upload his logs daily to G7VJR's Club-Log.

Mike RW1AI is supposed to depart St. Petersburg, Russia via the oceanographic research ship *Akademik Fedorov* on November 1st. His destination is **Progress Station, in Antarctica**. Mike expects to be there around December 16th and will begin R1ANP activity throughout all of 2010. QSL via RW1AI. See photograph during his last visit there.

David T6AG (CT1DRB) has been working for the past month in **Afghanistan** and is currently on a six month (plus or minus) work assignment. He was issued the callsign T6AG. His landlord finally gave him permission to install antennas and has been QRV on 30 metres CW.

In the future he plans to install more antennas for the other bands. He may have problems on 20 m and 80 m as these bands are apparently used by other local military communications. David has a Web page at http://t6ag.nra.pt/ QSL via EA3GHZ.

J5GQZ is Joao Carlos Marino from Portugal, working in **Guinea Bissau** for the next five years, with occasional visits to Portugal for 3 to 5 months at a time.

A second callsign is J5JUA for use with mobile operation. In addition he manages the beacon stations J5SIX and J5TWO. Look for J5JUA mobile in the daytime on 20 and 17.

At night he will use the J5GQZ callsign on 80 and 40 m. Joao installs





Mike RW1AI in Antarctica

communications systems, radio links between the capital city and Guinea Bissau's islands and other remote areas that do not have telephone service. His next return to Portugal is at the end of 2009. Joao is the most active of the four authorized Guinea Bissau stations.

XR9JA is a **South Shetland Islands** (more typically a VP8) callsign that will be activated from January 10th to January 25th.

This activity will be on **Greenwich Island** at the Arturo Prat Chilean Navy Base. The operating team will be XQ5IE, CE6UFF, F6DXE and CE5COX, Luis, Carlos, Didier and Dago. http://www.ce5ja.cl/

5Z0H will be active from **Kenya** by Enrico 5Z4ES, Frank IK8TEO, Tony IK8UHA and Antonio IK8VRII between February 10th and February 21st, including operations from **Wasini Island (AF-067)** and **Lamu Island (AF-040)**.

They plan to have two stations active on 160 to 10 metres CW, SSB and RTTY. QSL via IK8VRH (direct, bureau and LoTW). The website for the operation is at http://www.ddxc.it

Liberia. Chris de Beer ZS6RI is currently working on a project in Liberia, and will hopefully be QRV in late October to early November. He will alternate between working six weeks in Liberia, and then three weeks at home in South Africa, for the foreseeable future.

He plans to operate CW QRP with vertical and wire antennas; if there seems to be activity he might upgrade the antennas and the radio, and operate SSB and digital modes.

VK9X: Phil G3SWH and Jim G3RTE will be active from **Christmas Island (OC-002)** on 20-27 February 2010. They will both use the single callsign of VK9X/G6AY, and they will only operate CW on 80 metres through to 10 metres (no activity on 160 metres).

Propagation permitting, they plan to have two stations on the air for as many hours every day as is possible. QSL via G3SWH, direct or bureau.

Please visit www.g3swh.org.uk/christmas-island.html for further information.

The handwritten log of J79PAK, operated by Pierre HB9CUA (SK), has been transcribed by Jim Spears N1NK and was uploaded to LoTW on Thursday October 15, 2009. 1,430 QSOs were uploaded, 369 QSL matches were immediately made.

This log covers the period from July 11 through August 5, 2009. Francisco EA7FTR is responsible for processing paper QSL requests. Jim is the administrator of the LoTW account. Anyone who expected a LoTW QSL match and does not find it should contact Jim at n1nk@cox.net to resolve any log issues.

Alex YV5SSB updates all DXers on some upcoming activities of the 4M5DX group. A January 2010 operation from **Aves Island (YW0A)** is in the works for three or four weeks. They still need to negotiate the length of stay with the Venezuelan Navy.

The 4M5DX group is also working on a number of IOTAs. First one expected in November to December of this year on **Orchiia Island (SA-054)** as YW5O. In February 2010 they will try YW7IOTA from **Coche Island (SA-012)** and in March 2010 from **Patos Island (SA-048)** as YW5P.

Graham 5X1GS has been noticeably absent from the bands over the past few months. There is a good reason for that as he has been on a work assignment in northern Uganda and Sudan, far away from the shack.

On top of this he has moved to a new QTH, with a larger garden so he has room for the tower. So Graham is expected back on the air soon. QSL Manager Bob WB2YQH has all the logs and QSLs quickly.

At last, some more information regarding Vlad UA4WHX regarding QSL cards for his 2005-2007 DXpeditions through **Africa,** the **Indian Ocean** and the **Middle East.**

Vlad says, "We keep on answering requests." He says the bulk of the cards should be out by Christmas, and the rest will be "answered in due time as well". Has any VK station received any QSLs for this trip yet?

So another year has passed and with an unusually high number of DXpeditions which should have reduced the number of 'Countries Wanted' on quite a few lists. I wonder what 2010 will have in store?

So Seasons Greetings to all and good luck in the pile-ups until next year.

Special thanks to the authors of *The Daily DX (W3UR, 425 DX News (I1JQJ) and QRZ.DX* for information appearing in this month's DX News & Views.

For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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Two of the operators on the recent Conway Reef DXpedition.


FT5GA Team and friends.

News from

Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

QTC VK4
First Published July 1927 "Of, By and For the Amateur"
NEWS FROM/FOR QUEENSLAND RADIO AMATEURS

TARC

Townsville Amateur Radio Club, Annual General Meeting occurred on Sunday 22nd November 2009, tune in to the next issue for full details. TARC Management Meeting Tuesday 1st December from 7:30 pm at SES HQ, Green Street West End, Project Night Tuesday 8th December from 7:30 pm at SES HQ,

THE MAIN EVENT Christmas party Sunday 13th December from 2:00 pm at VK4TJS Satellite Dish City and a Social evening Tuesday 15th December from 7:30 pm at SES HQ. A busy North Queensland December, with an eventful 2010 coming up.

WICEN

WICEN Queensland operates a net every Sunday "rain, hail or shine" on 7.075 MHz from 8:30 am (2230 UTC) If conditions are poor on 7 MHz tune to 3.600 MHz. Call in and get involved, your support and voice is needed for this service.

TREC

Tablelands Radio and Electronics Club assisted the Gordonvale Scouts and Guides 52nd JOTA/JOTI weekend. With John VK4JKL, Tony VK4XL, Stephen VK4WSW and Dale VK4DMC setting up the Amateur Radio Station at the scout hall in Gordonvale.

Many contacts were made with other JOTA stations around VK and contacts were also made with ZL and CN8 stations and a highlight being an AO51 contact with a VK2 station.

TREC Christmas party Saturday 5th December at The Tolga Hotel. Prelunch drinks starting at 11:30 am and the feast begins at around 12:00 midday. On the 12th December, a club social get-together, show and tell followed by a committee meeting will occur at the club rooms.

RADAR

Rockhampton and Districts Amateur Radio Club participated in JOTA at the Guide hut in Rockhampton and the May Morgan Hut in Mount Morgan. Radio amateurs Don VK4BY, John VK4KDN, Jim VK4JYM, Doug VK4DUG and NickVK4CNQ assisted Margaret Hale OAM Guide Leader. Margaret has been active with Girl Guides since 1947. Don VK4BY fired up his TS-430 connected with a long wire antenna and with all 37 Guides making contact with VK4FNQ on HF.

Margaret smiled somewhat when she made a contact with someone that she had known since first starting with Guides. John VK4KDN helped the Guides with a battery operated Morse key and not long after translating the Morse that was being sent by the Girl Guides themselves. As the day progressed, so did the local bush fires with the Scouts having to be evacuated from Seeonee Park.

All were watching as the fire bombing helicopter and fixed winged aircraft made attempts to water bomb the inferno. Fortunately, no damage occurred to the Scout Den but, sadly, one private residence was lost. Fires continued into the night so for the first time these Scouts missed out on JOTA and JOTI. Many thanks to those mentioned for a well organised, though distracted, weekend.

TRG

Over the weekend 16-18 October Tableland Radio Group provided Amateur Radio assistance to the Scouts/Guides/Cubs who met up at Malanda on the Atherton Tablelands. TRG involvement commenced a month prior with information sessions to the various groups at their halls. These helped to break down the formality and helped to make the event fun and hence enjoyable.

Setting up on Friday afternoon with a group of scouts/cubs assisting with antenna erection of the inverted V and 11 metre pole triple guyed. Other equipment was the FT-2800, FT-897D and IC-706 plus lap tops, power supplies, ATUs, battery and solar panel plus info on the event and contacts with call signs. Operations commenced about 1730 on the Friday and continued until 2200 with PSK31 and 20 m SSB contacts in Europe.

Saturday saw two young ladies desiring to start at 0545 and continued until about 2300 whilst Sunday started at 0600 and finished about 0900. Activities revolved around the HF SSB and SSTV/PSK31 on 80/40/20 and 15 metres and 2 m FM using the TRG repeater at Butchers Creek, VK4RBP, to the Gordonvale Scouts which the Cairns Amateur Radio Club and Tablelands Radio and Electronics Club were operating. Fires continued into the night.

Ross VK4AQ gave a high Speed CW demonstration, whilst Bill VK4WL operated the digital mode SSTV/PSK31 side of things. The Tableland Radio Group (TRG) provided supervised voice operations, assisted by Pat VK4MUY, Dave VK4FUY, Stan VK4MFA, Alan VK4HBN, Val VK4FAIR, Wilf VK4ZNZ and Mike VK4MIK. Morse training was carried out by Wilf and Mike using a CW trainer where two could practice at a time.

Peter VK4BUG organized, supervised and carried out fault detection/rectification of kit construction. The leaders also did a construction using a piece of board, large nails, wire, torch bulb and batteries to manufacture a basic Morse code light sending device.

A very rewarding experience working with the youngsters and seeing their joy and excitement of working radio and talking to others from near and far. Thanks must go to the many "hams" that set up stations for the event and gave contacts. TRG will be back again next year working the JOTA station call VK4GHL at Malanda.

Ipswich & District Radio Club

A very busy lead up to JOTA for the Ipswich and District Radio Club, It just goes to show how much effort some clubs put in, to prolong the sustainability of amateur radio in Australia. A wonderful display was put on for the Cubs and Scouts of the Taringa Milton Toowong Group. It was a pretty huge event for the Club in general, having two events on the same day.

The first was in appreciation for our local Ipswich Councillor, Mr. Andrew Antoniolli, and the second for the Cubs and Scouts in the evening for JOTA. Leading up to JOTA Mike VK4QS had written to the Commanding Officer of the 9th Battalion, Royal Queensland Regiment, Lieutenant Colonel Mike Bond, as to the possibility of having an Army Radio Vehicle turn up for the day as an added attraction for the young Cubs and Scouts. Colonel Bond

captions coming from chris

granted the request, and thus, Sergeant Greg Chard, and Lance Corporal Jones arrived in the Army "FFR" Land Rover Saturday morning.

This year was to inspire the Cubs and Scouts with all that amateur radio could offer, plus a bit of "WOW" factor with Army representation on the day.

The refurbishment of the Clubhouse saw operating desks and floor carpets installed, as well as paint on the walls. This was in most part due to co-operation with our local Councillor, Mr. Andrew Antoniolli, as well as the Mayor of Ipswich Mr. Paul Pisasale.

Antennas for the event were in the form of a full wave 80 m Loop, erected in the upper branches of the gum trees to a height of about 15 m. Graham Reuter VK4YEA provided his Cherry-Picker for the day to allow erection of the loop up high. Also, one "F" call member, Graham VK4FGCC, brought along his Squid Pole Antenna that he had made, and set it up in no time for 40 m operation.

One of the focal aspects of the day was the involvement of the Foundation licence members of the Club in the erection of the antennas as well as the operating and interaction with the Cubs and Scouts on the Air.

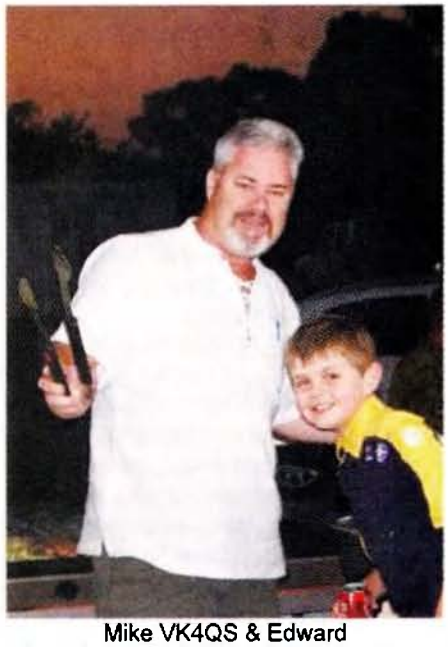
Upon arrival, the Cubs and Scouts were ushered down to the camouflaged Army radio vehicle at the back of the clubhouse. Sergeant Greg Chard undertook some very basic explanation for the eager onlookers as to how the Army radio worked. The fascination on their little faces said it all. There were allowed to take turns sitting in the rear of the radio vehicle which delighted one and all. Corporal Jones then volunteered to walk up to the Water Tower with some of the Cubs to establish communications with Sgt. Chard at the radio vehicle.

As the afternoon faded into the evening HF communications were established with other Scouts around the country as propagation permitted. This was of limited success, but reverting to the 2 m band allowed us to access various repeaters to work the Scouts as far away as the Gold Coast.

By this time the BBQ was well alight and the savoury smell of BBQ sausages and onion filled the neighbourhood. The children lined up in an orderly fashion and proceeded to enjoy the sausage sizzle under the stars. Towards the end of the evening the Cub Leader Toby Gordon was kind enough to hand out a special JOTA2009 patch to all the radio club members involved. Sergeant Greg Chard was kind enough to give each of the Cubs and Scouts an Australian Army Rising Sun Shoulder Patch for their Scout Uniform. Even Mike's VK4QS own children Zack, and Xavier and their friends Jordan, Summer, Bryce and Reilly also took part in the fun of the day. Not long after this the children lined up out the front of the Clubhouse to recite the Scouts Prayer for us all, followed by a traditional "Scout's Howl" to finish off a very delightful JOTA Event. Baden Powell himself would have been thrilled to bits at the day's results.

Well earned thanks to the following people who volunteered their time to make this event possible: Sergeant Greg Chard, L/Cpl Jones, John Edwards VK4IE, Wayne Brice VK4AB, Warren Heaton VK4GT. Rob Bryce VK4HW, Graham Reuter VK4YEA, Darrin Last VK4FVRX, Tony Costello VK4FAAT, Graham Cotterill VK4FGCC. From the Scouts, thank you Toby Gordon and Ian Lightbody, and all the Cubs and Scouts.

In recent days leading up to this article, the Ipswich Club received a framed Certificate of Appreciation from Toby Gordon and the Cubs and Scouts



Mike VK4QS & Edward

of the Taringa-Milton-Toowong Scout Group. A personal message from Mike to everyone involved for 2009 JOTA: many thanks and I look forward to seeing you all again next year. Cheers & Best Wishes, Mike, VK4QS, President, Ipswich & District Radio Club. **ar**



L to R John VK4KDN, Margaret Hale OAM, Don VK4BY, Jim VK4JYM, Doug VK4DUG and Nick VK4CNQ.



Taringa Milton Toowong Group enjoying JOTA.

AHARS

John Elliott VK5EMI

Cold, clarity,calving and weighty matters

October meeting: Our annual Club construction night, hosted by our construction King, Graham VK5ZFZ, soon had old and new hands (and eyes!) alike beavering over Graham's two tone oscillator project.

Where Graham finds the time (and parts) to supply 50+ kits no-one knows, and no-one dares to ask! Most members had the pleasure of hearing their creations working by the end of the evening.

We were honoured by the presence of John G4GEY and his partner, Susan, on the night. He is from Stockport, near Manchester, in England.

November: Justin Giles-Clark VK7TW will give a talk on his optical communications work. Justin and Rex Moncur VK7MO have featured regularly in *AR*, as they push the limits of communications ever further. Their next goal, I understand, will be to finally span Bass Strait with their optical gear.

December: Our annual Christmas luncheon will be held at a new venue, Mount Lofty House, on the Mount Lofty Summit Road.

January: The club picnic luncheon will be on Sunday January 17th, at the usual Bridgewater Lions Park, near the Old Mill. Chair/s and shade, and whatever, are recommended. Bring salad or dessert to share. Meat and bread provided.

Club Vice President Leigh VK5KLT had some field trip fun visiting sister club OH3NE in Finland. His lakeside log cabin radio site deep in the remote Seitseminen forest was incredibly quiet with almost zero background noise; quite uncanny to experience!

The HF bands were buzzing with signals and plenty of regional European and long path DX from USA, ZS, JA and several VK and ZL stations. A makeshift 80 metre wire dipole strung high between a pair of tall birch trees did an admirable job on 80, 40, and 20 metres.

Even weak signals had 100% intelligibility and copy due to the low background noise floor. Leigh reported that one could easily be mistaken that the antenna coax was disconnected from the rig until you tuned-in to a distant station thundering in loud! The striking difference between living in the northern and southern hemisphere / far away Australia is the large amount of on-air amateur signal activity that one constantly hears. The photo shows the 100 year old 'shoe makers' cabin from which Leigh worked.



100 year old 'shoe makers' cabin near Seitseminen from which Leigh VK5KLT worked.

Our regular contributor, Christine Taylor (VK5CTY), has recently returned from northern Europe, indulging in amateur radio to the extreme. Her radio hosts have been SYLRA (Scandinavian Young Ladies Radio Amateurs, the equivalent of our ALARA). The SYLRA meeting was held in Kolbotn (near Oslo), Norway on 3-6 September, with the special callsign LA1SYL. After that, on 7-11 September, Ingrid LA8FOA, Unni LA6RHA and other YL operators, including Christine, were active as JW1SYL from Longyearbyen, Svalbard, IOTA EU-026.

Just where is Svalbard? Look it up – you will be amazed – it is a real DX location.

Messages received from Christine on her top of the world trip included – 'Have seen and heard a glacier calve; visited a Russian settlement; operated on the radio; tasted whale, seal and reindeer; watched a practice helicopter rescue; had lots of fun.' And that was somehow sandwiched in between visiting the UK, Sweden, Italy and Estonia! (Full story under ALARA).



VK5BUG photo: Club member David 'Doc' Wescombe-Down VK5BUG returned recently from the World Masters Weightlifting championships, in which he managed 5th place in the Over-60 Superheavyweight (105+ kg) class.

He is pictured at Sydney's Olympic Park after the event with Ingrid, his wife, and son Clay. To quote the Doc 'I come in handy for shifting furniture, rack-mounted equipment, and the like, but don't come cheap...!!!'

David Giles VK5DG

CUBESATS for AMSAT

During the AMSAT-NA symposium in October it was announced that AMSAT-NA would construct a Cubesat with a transponder. This follows the AMSAT-UK Colloquium announcement of the construction of FUNcube in August.

What is a Cubesat?

In its simplest form a Cubesat is a satellite that is a 10 cm per side cube and has a mass of less than 1.33 kg. This is designated as 1U size. Cubesats can be twice (2U) or three times this size (30 x 10 x 10 cm and 4 kg). Other design criteria include not using hazardous substances, not using pressure vessels greater than 1.2 atmospheres, total battery capacity of less than 100 Watt-hours and no extra space debris arising from the launch.

The Cubesats are launched from the Poly Picosatellite Orbital Deployer (P-POD) launch container. The P-POD is a square aluminium tube with a door at one end and a large spring to push up to three Cubesats out into space. The P-POD is built into the launch vehicle and a signal to open the door at the right time. Pyrotechnics (explosive bolts) are not needed or permitted. A single or double sized Cubesat will have small springs fitted at one end to separate itself from the next Cubesat in the P-POD.

Cubesats are constructed within an aluminium frame with tolerances of +/-0.1 mm. Since the P-POD contacts the Cubesat along four edges, there is some room for folding antennas and protrusions up to 6.5 mm above the outer surface (e.g. sensors or cameras). All electrical systems will be off (even real time clocks) and batteries discharged before and during launch. A spring loaded deployment switch will connect the solar panels after ejection from the P-POD. Any transmitter greater than 1 mW must stay off for at least 30 minutes after deployment. Like any other satellite, Cubesats have to go through vibration and vacuum baking tests to meet the launch agency's requirements. Typical vibrations can be from 50-2000 Hz at an acceleration of 10 G.

More details including structural drawings can be found in the Cubesat Design Specification [1].

Other launchers have been used in past missions, but they follow the same principle.

Success and failure

The first six Cubesats were launched in June 2003. Of these two were designated with OSCAR numbers: CUTE-I (CO-55) and XI-IV (CO-57). Both are still transmitting 100 mW CW beacons after six years in space. So far ten Cubesats have had OSCAR designations.

So far only two launch failures carrying Cubesats have occurred. The largest launch failure was in July 2006 when 14 Cubesats became part of a large crater just 26 km from the launch site in Kazakhstan.

As at October 2009, 48 Cubesats have been launched. Of these 32 have



AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMP
Maddens Plains repeater on 146.850 MHz

VK2RIS
Saddleback repeater on 146.975 MHz

VK2RBT
Mt Boyne repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne,
438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm.

These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

successfully orbited, the other 16 have been in two launch failures. Like other satellites, not all Cubesats launched have burst into life. Some were never heard after deployment, some did not fulfil all of their mission goals. Overall the Cubesats are multinational with over 40 universities, schools and private companies involved. They have been built in ten different countries and launched from Russia, Japan, USA and India. A full list of the missions is at the Cal Poly Website [2]. In next month's satellite review, there will be details of at least eight Cubesats that you can listen out for.

List of achievements

Getting a satellite built, tested and launched is an achievement in itself. Here is an incomplete list of the various mission functions of the satellites so far.

Deployable solar panels
Camera
Advanced solar cell testing
Data transmission protocols
Using a personal digital assistant (PDA) as the main computer
Digitalker and SSTV
Earthquake detection measurement
Biology experiment
GPS receiver
Sun sensor
Earth sensor
Star sensor
Spectrometer
Gyroscope
Magnetometer
Magnetorquer
Reaction wheels
Radiation measurement
De-orbiting system
ION thruster
Microwave transmitters, beacon.

FUNcube

AMSAT-UK's FUNcube will be similar to AO-7. It will be a 1U sized, 40 kHz wide U/V linear (SSB/CW) transponder with a 70 cm receiver and 2 m transmitter. The proposed telemetry format will be 400 bd BPSK with Forward Error Correction (FEC) similar to that used on AO-40.

The whole FUNcube project is more than just a satellite. Other sections consist of a simple receiver that can be plugged into a laptop USB port or soundcard with matching telemetry decoding software, and an education package with classroom experiments that can be compared with the satellite's material science experiment. The target audience will be primary and secondary school students.

The satellite will have a simple design to fit in a 1U size structure. Apart from the 1 Watt linear transponder it will feature no on-board computer. This goes back to the AO-6/7/8 days when command decoders used hard wired logic.

AMSAT-NA's Cubesat

AMSAT-NA is taking a different approach. Their proposed 1U sized Cubesat will be more like AO-51 but using a design similar to that being tested on the upcoming ARISSat-1.

It will have a U/V FM transponder and use deployable solar panels. While this mode is opposite to AO-51's mode V/U transponders, ground stations will most likely be able to use existing equipment. It is expected to be usable with handhelds and portable antennas.

Most Cubesats use CW beacons and low duty cycle transmitters because of the low amount of power available. An FM transmitter at full power with a 100% duty cycle will need a greater electrical supply than on most current Cubesats. The nearest equivalent satellite currently in orbit is SEEDS-II. This has a 450 mW transmitter that uses an 100% duty cycle FM signal when in digitalker mode. But that is not used 100% of the time.

Given that the sunlight has a power density of 1380 Watts per square metre and a solar panel will convert typically 15% of that to electricity, then a Cubesat with only 100 cm^2 facing the sun can produce about 2 Watts total power. This has to supply all onboard equipment and keep the batteries (if used) fully charged. To increase power either a larger satellite is used or extra solar panels.

Deployable panels are used on Cubesats CUTE-I (CO-55) and Delfi-C3 (DO-64). Unlike FUNcube it will have an onboard computer. No mention of a software defined transponder like ARISSat-1 was made. Some details of previous satellite designs have been made openly available and AMSAT-NA will continue this with the new Cubesat. It is hoped that other satellite teams will use AMSAT's designs for their own projects.

As announced at the 2009 AMSAT-NA Symposium, this Cubesat's design will be effective immediately using current skills and technology [4]. Total cost will be in the order of US$100k.

Compared to an AO-51 size microsat costing US$400k to US$800k (or US$10 million for the Intelsat ride or P3E), it is currently affordable. AO-51 and SO-50 are showing their age and SumbandilaSat (SO-67) will not last more than 5 years.

In addition AMSAT-NA will be directly involved with two other Cubesat projects. The University of Florida is developing SwampSat; a Cubesat to test a gyroscope controlled attitude system. This will allow the satellite to rapidly and accurately orientate itself in space [5].

The other project is with SUNY-Binghamton (State University of New York) and the IBM Systems Engineering Integration Center. They will develop deployable solar panels and super capacitor power systems.

During the 2006 AMSAT Symposium, Lou McFadin W5DID presented a paper on using supercapacitors as an alternative to batteries [6]. The main advantages are unlimited charge discharge cycles and a known voltage versus energy curve. The main disadvantages are that they have not been tried in space and have less energy storage density compared to batteries. He presented a design using a 50 Farad capacitor and an up/down power converter. A current example of an ultracapacitor is 5000(!) Farads at 2.7 volts working.

References

[1] Cubesat design specification http://cubesat.atl.calpoly.edu/pages/documents/developers.php

[2] Cubesat missions http://cubesat.atl.calpoly.edu/pages/missions.php

[3] FUNcube http://www.uk.amsat.org/component/option,com_wrapper/Itemid,278/

[4] News From The AMSAT 2009 Space Symposium http://www.amsat.org/amsat-new/index.php

[5] SwampSat http://www.ufsmallsat.com/mission.html

[6] McFadin L.W. 2006 "A new approach to Satellite Power Systems" from Proceedings of the AMSAT-North America 2006 Space Symposium.

Updates

Tony VK3JED has informed the AMSAT-VK group that the IRLP node for the AMSAT-VK net has changed to 9558. The AMSAT-VK information has been updated.

ANUSAT has been reported as 'nearly dead'. Signals have weakened due to a failure in one off the solar panels. The

Continued foot of next page

VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

With the warmer weather, there has been a bit of tropo activity on the bands.

On the evening of October 17th, Phil VK5AKK in Adelaide heard the VK6REP 2 m beacon near Esperance at 5x2. At 1025 Z, he worked Wally VK6WG in Albany on 2 m at 5x2 over the 1897 km path. Wally is now 98 years old and still going strong.

On the morning of October 29th, Peter VK5ZPG near Adelaide worked Glenn VK4BG near Hervey Bay – a difficult path of 1633 km over land. His report was 4x2. Peter had to drop the guy wire of an HF antenna to turn his 2 m beam in the right direction. There was no sign of meteor or aircraft enhancement so it seems it was a purely tropo enhancement contact.

On the morning of November 1st, a high-pressure cell pushing its way between Victoria and Tasmania produced some lift across the region. Signals were good between Melbourne and Adelaide. Karl VK7HDX turned his beam towards Adelaide and his "K" was heard faintly. Phil VK5AKK was hearing the VK7RAE 2 m beacon at 5x1. At 2145 Z, Karl worked Phil (4x3) on 2 m over 1030 km. They then also worked on 70 cm (4x2).

That evening, with the High heading east, good conditions across the Tasman produced several contacts between ZL and VK2. At 0714 Z, Nick ZL1IU reported hearing Newcastle Ch 5A TV booming in and, first time for a long while, the VK2RSY 2 m beacon at 5x7. Bob ZL1RS and Mark ZL2WHO also reported hearing Ch 5A. Starting at 0730 Z, Nick worked VK2BLS (5x4), VK2AH (5x5), VK2ARA (5x5), VK2QO (5x5), VK2KU (5x5), VK2XTT (5x1), VK2ZT (5x9), VK2DVZ (5x2), VK2MER (5x3), VK2DAG/P (5x3) and VK2KOL (5x5) – all on 2 m. At 0825 Z, Mark ZL2WHO had his first 2 m contact across the pond to VK2ZT (5x2). ZL2DX and ZL1AOX also worked a number of the VK2 stations. At 0904 Z, after several attempts with others, Nick worked VK2ZT (5x1) on 70 cm. At 1008 Z, Nick reported hearing the VK2RSY 70 cm beacon at 5x1.

The following morning, conditions were still holding up. At 1847 Z, Nick ZL1IU worked VK2DVZ (5x8) and VK2ZT (5x5) on 2 m. He also worked Steve VK2ZT (5x1) on 70 cm. Later, at 0000 Z, Nick again worked Steve (5x5) and VK2EI (5x5) on 2 m.

On the evening of November 10th, Rex VK7MO reported hearing the Newcastle Ch 5A TV at good strength. At 1142 Z, he worked Steve VK2ZT on JT65a at –14 over the 1196 km path. Signals built up a little and they tried an SSB contact, but there was not quite enough to make it.

VK3TPR Portable Operations

Peter VK3TPR has once again been operating portable, this time trying some Aircraft Enhancement from under a major flight path. He writes:

We arrived in Bright on Saturday afternoon about 2.30 pm, found a suitable motel (one to the XYL's satisfaction, that is) and then thought about a place for a little AE (aircraft enhanced) radio playing. Bright is in the Ovens River valley and almost totally ringed by hills or mountains. It is also directly under the flight path for jets travelling from Sydney or Canberra to Melbourne.

I was directed by the lady at the Tourist Information Centre to "Clear Spot" on Clear Spot Rd (more like a track) 10 km from town via a circular route. I drove up to this 1000 m high lookout on Saturday afternoon to check it out, seemed pretty good, so the plan was set to be set up at Clear Spot QF33LG at 8.00 am local on Sunday morning.

Finally got 2 m, 70 cm and 23 cm set up by 8.40 am Sunday and pointed to Canberra (about 50 degrees bearing) immediately hearing Chris VK1DO on 144.200 with a 5/9 signal. Chris gave me a 5/4 from my IC-706 - 50 watts into 9-element Yagi. Also worked Chris on 70 cm with the Yaesu FT-897 and 100 watt amp, for 5/7 5/3 reports. I worked Chris several more times over the next hour and a half, even off the back of the beam. No need for AE to hear Chris!

Worked Rob VK3XQ in Yea on 2 m 5/7 each way.

Then started to work Melbourne stations with the beams pointed SE.

Michael VK3KH 5/9 5/7 on 2 m, 5/3 5/1 on 70 cm, but try as we might, Michael and I just could not complete a QSO on 23 cm over the next hour. Michael was spotting the planes on

AMSAT *from previous page*

beacon on 137.4 MHz can still be heard though. A description of ANUSAT appeared in the June AMSAT column.

CP6 has gone silent due to the failure of the communications and data handling processor. The mission has been a success with over 5 Mb of data collected, more than their previous two missions combined.

UWE-2 has been silent but is still functional. The 70 cm beacon has been turned off to conserve power.

CUTE-1.7+APD (CO-56) has re-entered. This happened towards the end of October when it reached a perigee of approximately 130 km.

LUSAT (LO-19) has gone silent just short of its 20th anniversary. The 70 cm telemetry beacon was last heard around the 23rd of October. It is hoped that LO-19 can be revived for its anniversary in January 2010.

Final Pass

It is not surprising that the first AMSAT Cubesat would have an analogue transponder. Now we have two different Cubesats with these to look forward to. For those readers who have not heard any of the Cubesats, I recommend trying SEEDS-II (CO-66) on 437.385 MHz. It transmits CW telemetry, packet telemetry and a pre-recorded voice/SSTV message. Next month'- the six monthly satellite review. **ar**

Plane Plotter and I was reporting to him on 2 m as they flew overhead - I could hear them roar/echo above at 30 - 40 thousand feet. I estimate 15 or more planes went over in 2 hours.

Alan VK3XPD came up with a 5/7 signal on 2 m, was 5/1 on 70 cm and after several attempts (and several planes) we confirmed a contact with 4/1 each way on 23 cm. Later I worked Alan for 5/1 4/1 - perhaps my AE technique was improving.

Worked Jim VK3II on 2 m 5/5 and 5/5.

Worked Andrew VK3OE on 2 m 5/7 5/5 and 70 cm 5/1 each way.

All this time I was liaising with Michael and Alan on 2 m, sometimes receiving signals over 5/9. Somewhere about this time Dave VK3HZ came up with a big signal on 2 m so I worked him a few moments later but signals faded a bit for a 5/1 each way.

Then came the biggest AE lift of the morning, around 10.20 - 10.25 local and very excitedly I worked Alan VK3XPD 5/1 and 4/1 on 23 cm and then Dave VK3HZ 5/5 5/2 on 70 cm and 5/2 5/1 on 23 cm – yippee, good signals at last on 23 cm. For 23 cm portable, I was using a MiniKits transverter with 10 watts into a 24-element Yagi and an FT-817 as IF.

What a great morning - logged over 20 contacts with those listed above. Many thanks to all for being there.

10 GHz Operations

It is good to see more people becoming active on one of the last frontiers of amateur radio experimentation – the microwave bands.

Tim VK3JTM in Ararat reports on his first contact on 10 GHz:

On Sunday 1/11/09, Alan VK3XPD and Russell VK3ZQB tested my recently constructed 10 GHz Transverter. First contact was with Alan at 48.5 km who was received at 5x9+40 and my report was 5x1. Alan was running 8 watts portable at QF12gh to my 320 mW at QF12lo.

I also heard Russell on CW at 128 km with a 529 report one way. Russell was running 2 watts from his home QTH.

I was very pleased to see the transverter working, although it looks like there is still more work to be done fine tuning the feed for better output.

Thanks to Alan and Russell for their time for testing it so far.

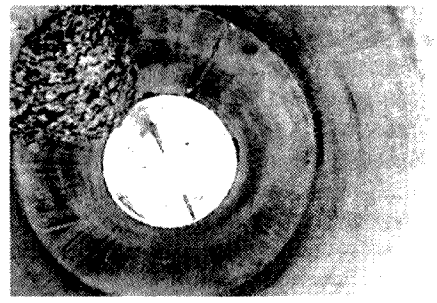
ZL Beacon Change

Russell ZL3NW reports that he has changed the ZL3VHF 2 metre beacon antenna from a vertical whip to a horizontal turnstile. The power was also measured at 8 watts to the antenna. ZL3VHF is located in Christchurch and operates on 144.285 MHz. Hopefully this will make it easier for us horizontally-polarised VKs to hear it. Any reception reports would be appreciated.

EME Birdies

Doug VK3UM was measuring his EME system performance on 23 cm recently and noticed that receive performance seemed to be down a few dB. After investigating all of the usual things, he finally did a detailed inspection of his antenna feedhorn. When he removed the Teflon end cover, he discovered that a family of swallows had moved in.

So now he knows that a swallow's nest in the feed is worth 2.2 dB off the receiver. The nest was carefully relocated and a more secure cover was fabricated to prevent any further invasions. The swallows are probably missing that nice warm feeling they encountered during the recent EME contest.



Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

Mt Arden DXpedition: On 10 and 11 October, Barry VK3BJM and partner ventured to Mt Arden in the Flinders ranges to operate from grid locator PF87. On this occasion, Barry took digital modes, which enabled a much wider group of stations to access this rare grid square. Barry reports working 11 stations via meteor scatter using FSK441 on two metres covering VK2, 3, 4 and 7. He worked four stations on two metres JT65 and was good copy in Melbourne at around 900 km with the best distance being to Jim VK3II at 950 km.

10 GHz Digital: Colin VK5DK reports that both he and Russell VK3ZQB have their 10 GHz systems GPS locked and have JT65 working one way and JT6M in the other over a 140 km path between their home stations. Colin says this is a work in progress.

Digital from Norfolk Island 3-14 January 2010: The team of Michael VK3KH, Alan VK3XPD and Kevin VK4UH will be taking digital and propose to work FSK441 on two metres and JT65 on all bands up to 10 GHz using GPS locked equipment. On two metres, FSK441, they should be in meteor scatter range of most of the east coast of Australia and ZL. Also look out for tropo-ducting extensions of meteor scatter as Hepburn often indicates large yellow patches around Norfolk Island that could be used to extend the meteor scatter range to VK5 and VK7.

Bass Strait crossed on 474 THz (Red light): On 27 October Rex VK7MO and Joe VK7JG assisted by Paul VK7KPG achieved one way communication across Bass Strait on 474 THz over a distance of 288 km from Mt Horror in Tasmania to Mt Liptrap in Victoria. Communication was achieved using a new mode "Weak Signal Communications" (WSC) developed by David VK3HZ as an enhancement to the audio spectrum analysis program Spectrum Lab by DL4YHF. WSC can work down to -44 dB and achieves this performance by using very narrow binwidths – in this case 3.8 mHz – at the expense of spending 20 minutes to send two callsigns. Initially both stations beamed just above the horizon and while callsigns could be copied, signals were marginal varying from -50 to -44 dB. Joe suggested he raise the elevation and immediately signals improved and by around 2 degrees became rock solid. Rex then also raised the elevation and signals peaked at -28 dB on the WSJT scale, some 16 dB above the detection limit for WSC. While a few attempts were made to use JT65a the best result was -30 dB without any decode. The following is a simplified example of the output of WSC decoding the callsign VK7JG during the Bass Strait tests:

Time	Freq	S/N	MsgA	MsgB
23:02:01	1038.509	21.5	VK7	
23:02:11	1038.509	20.9	VK7	
23:02:21	1038.508	20.1	VK7	
23:02:31	1038.508	19.2	VK7	
23:02:41	1038.508	18.2	VK7	
23:02:51	1072.957	19.1		JG~
23:03:01	1072.957	20.1		JG~
23:03:11	1072.955	20.9		JG~
23:03:21	1072.955	21.6		JG~
23:03:31	1072.955	22.1		JG~

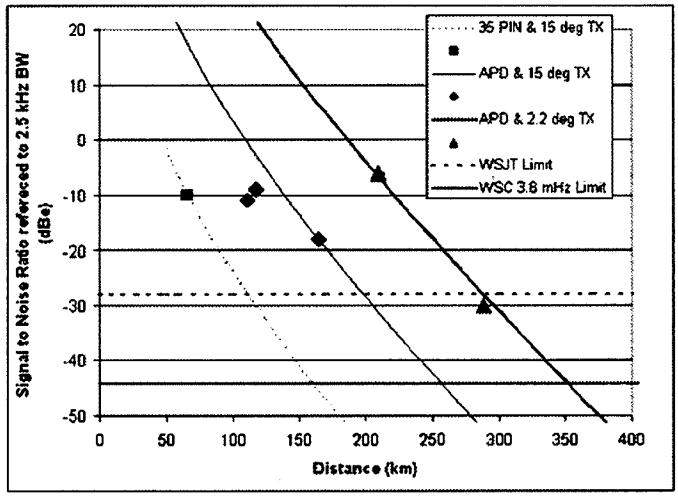
The first column is the time and is used to identify whether the first or second part of the callsigns is being sent. The second column is the frequency of the tone being sent of which there are some 18,000 possible tones to represent every possible combination of the first or second parts of a callsign.

As binwidths are only mHz, frequency stability was achieved by GPS locking of the sound cards at both ends. The third column is the signal to noise ratio and messages A and B represent the first or second parts of a callsign. The following graph shows the results of this and earlier tests compared to a propagation model outlined by Paul Edwards VK7ZAS in DUBUS volume 1/2009.

From the following diagram it is seen that the 288 km data lines up quite close to the model prediction. This is despite the fact that on the occasion of these tests there was an excess of 3 dB noise due to moon light and the clouds were much higher leading to increased scatter angle and less scatter gain but compensated by lower losses through the air at higher altitudes.

The tests results confirm the modelling and suggest that with the WSC mode and the present equipment it should be possible to achieve a distance of around 350 km.

The successful trial reported above did not occur on the first attempt as it was necessary to find just the right conditions with



cloud high enough to allow line of sight from both stations to the scattering point and no cloud beneath. It took some 10 days to find the right conditions and some failures due to fog. The support of Brendon McMahon and David James of the Bureau of Meteorology was critical in forecasting the conditions that allowed success. Brendon also produced an excellent post trial meteorological assessment which showed that scattering was from cirrus clouds at around 7000 metres which explains why it was necessary to increase the elevation.

These trials have for the first time shown that scattering from thin high-level clouds is useful for propagation and that a critical element to success is information on cloud height for elevation alignment of the TX and RX.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au

The Magic Band – 6 m DX

Brian Cleland VK5BC

Activity improved during October with some 'E' openings and meteor scatter continuing to provide many successful contacts but the highlight was toward the end of the month when the Solar Flux rose to the low 80s and there were several TEP openings to JA from most areas of VK4.

Gary VK4ABW from just north of Townsville reports the following:

I have been monitoring 49 MHz a fair bit and updating my database. Not too much to report from up north. I was listening to 49 MHz on Friday night (23rd Oct) and noticed it was getting fairly strong, so I went and checked for beacons on 50 MHz. I heard the JA2IGY and JA6YBR beacons coming in nicely around 1031 Z, so I called on 50.110 CW. Unfortunately signals were way down with a JA3 hearing me but we never completed. Saturday afternoon (24th) the Chinese TV returned with a vengeance at 0601 Z but unfortunately did not produce any contacts on 50 MHz, despite calling for about 15 minutes on CW and SSB.

Sunday afternoon (25th) the 43 MHz data burst transmitter was S7 at 0421 Z and quickly rose to pound the needle +30db by 0426 Z. By 0431 Z the Chinese TV on 49.750 was quickly rising out of the noise and peaked at S9 shortly after. I snooped around on 49.750 and spotted a Middle East TV signal (Ashgabat) at S2, so I then checked on 50 MHz and heard the JA2 and JA6 beacons S2 at 0515 Z. I called CQ on 50.110 and JA3APL immediately responded with a 5/5. We completed the contact and I announced that I was moving up to 50.128. Well ... didn't I drag a dog pile with me! I spent the next hour and 10 minutes working JAs and China. I quickly worked JA3APL, JF1LXO and JR6EXN from 0520 Z till 0526 Z and noticed a station signing D7 in the pile up. I QRZ'd him and got BD7NWF (Vicki) 5/7 just north of Hong Kong, China at 0528 Z. I completed with him quickly as many JAs were still calling. At 0531 Z I then went on to work JA4GXS, JH4ADV, JH6SQZ, JH6RON, JI3CJP, JH1OCO, JA1PVI, JH2LFG, JI1CUL, JA2IVK, JE3TJS, JH3EEF, JR1MLE, JA9SJI, JR3QLC, JA1CCO, JA6TEW, JA1QVM, JA1RJU, JA2DDN, JM1TWR, JM1IGJ, JA1FNA, JA1SST, JA7EVP, JL1MTY, JH2JUG, JA4TOH, JR1USO, JR1LZK portable 2, JH1PWA, JH1KYA, JR1MLT, JA1KQA and JA2IVK rounding it out at 0626 Z. My signal was hopping all over JA, going from east to west many times during the pile up. There was still many JAs calling after 0630 Z but they were rapidly fading down.

Many JAs reported that I was 5/9+ in Japan.

Lloyd VK4FP in Townsville also worked the BD7 and a couple

of the JAs but could not hear the stations that I worked at the beginning and end of the opening. This appears to be due to my angle of radiation as Lloyd is not far from my place.

A little further south Kevin VK4BKP in Mackay reports working several JAs between 0455 and 0523 UTC on the 24th Oct. Stations worked as follows:

JA1RJU 5/9, JM1TWR 5/9, JH6SQZ 5/9, JM1WBB 5/9, JK1TWQ 5/7, JA1CUL 5/8, JA1VZV 5/5.

Then on 25th Oct Kevin again worked a further 4 JAs between 0515 and 0519 UTC.

Andrew VK4KAY also in Mackay reports hearing the 49.750 MHz Chinese TV carriers on both the afternoons of the 24th and 25th Oct. On the 24th there was dog pile of JA stations on 50.110 but Andrew only managed to work JA1RJU around 0500 UTC.

The JA openings on the 24th and 25th also extended down as far as the Hervey Bay area with Paul VK4MA and Wade VK4WM working many JAs (CW). Wade reports further openings on the 26th Oct when he worked JA2HCB, JN1NDY and JA1FNA (all CW) between 0559 and 0626 UTC and then on the 30th working a further 5 JAs (2 SSB and 3 CW) between 0411 and 0440 UTC.

On the 30th Oct the JA opening extended as far south as the Gold Coast with Brian VK4DDC working several JAs.

Ron VK4DD in Brisbane reports hearing Paul VK4MA working several JAs in CW on the 28th Oct and although hearing the JAs could not complete a CW contact but did finally work JN1NDY in SSB.

Further news from Bob ZL1RS:

We are going back to Rarotonga mid November for another visit (Barbara and I love the place). During this trip Victor E51CG and I will install the 6 m beacon supplied from Dave N3DB and "The Worldwide 6 m Beacon Project Inc" guys. Some preliminary beacon information is available on my web site at http://www.qsl.net/zl1rs under the "Where in the world is Bob going next?" link. Hopefully there will also be some more early openings in the new Es season while we are there, and we can get a few 6 m QSOs in!

I will also be taking a 7-element YU7EF 6 m Yagi that I built for Warwick E51WL on Penrhyn Atoll in the Northern Cook Islands (separate DXCC entity). When we are in "Raro" we will ship the Yagi up to Warwick via the "island trader boat" ... so we can expect him to be about on the band this summer as well. Warwick has a short boom 5-element Yagi at the moment but the extra few dB of gain from the bigger Yagi will make a difference when it counts. I understand he wants to try 6 m EME and so is building an amplifier to make that possible.

Thanks Bob for all your efforts to get E51 activated and the good news is that Victor E51CG has heard two KH6 beacons and worked KH7Y and KH6HI during October. Victor on one occasion also heard K6FV/b from California and listens for the VK/ZL beacons most days following the ANZA 14 MHz net at around 0515. Hopefully during December we will hear Victor in VK/ZL.

Meteor scatter digital activity is continuing early each morning and Brad VK2QO reports that October has been one of the better months for scatter thanks to the Orionids and Taurids with many contacts being made on 50.200 in SSB and CW also 50.220/230 with the digital modes. Scott VK4CZ has the most contacts for the month with 26 the best day being the morning of the 10th Oct working Dave VK1DJA 5/3, Brad VK2QO 5/2, Norm VK3DUT 5/1, Brian VK4EK 5/1, Peter VK5PJ 5/2, David VK7AAD 5/1, Glenn VK7AB 5/1 and Joe VK7JG 5/7.

Brad is offering the following certificates for scatter contacts that are confirmed each way during 2009;

- longest distance on SSB, CW and Digital,
- first ZL confirmed in either SSB, CW and Digital (limited offer till 1st ZL contact on 6 m),
- all states worked (VK1 to VK8 only) in any mode,
- VK9 any mode.

So make sure you record your contacts and the distance from the stations worked.

They will be designed by the person that designed his new QSL card and will be laminated and sent free of charge.

During the month there were several 'E' openings, most of them of short duration. The best opening was on the 23rd Oct with a good opening from VK4 (Brisbane area) to VK2, 3 and 7. Ron VK4DD reports the band was open for 1.5 hours when he worked 2 x VK2s, 7 x VK3s and 4 x VK7s. The same opening Doug VK4ADC worked VK3OE and VK7AAD and Brad VK2QO reports working Phil VK4FIL 5/9, Harvey VK4AHW 5/3, Ron VK4DD 5/9 and Les VK4ALH 5/5.

On the 30th Oct John VK4FNQ Charters Towers worked Brian VK5BC and Bill VK5ACY.

Lets hope we have another good summer 'E' season with some good multi hop openings to A35, E51, DU7 etc. and that the new sunspot cycle starts to improve.

A late update from Victor E51CG in Rarotonga:

The E51USA Beacon is now on 50.051 MHz - 20 watts into a 5-element beam at 58 feet. Thanks to Bob ZL1RS and Barb who are here at the moment looking for smoke and flames from the beacon ... and thanks to all who helped with this project.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com **ar**

SILENT KEY - VK7TS

Trevor Spargo passed away on Tuesday 20 October 2009.

Born in South Africa, a surveyor by profession, he worked in Holland and Switzerland before coming to Tasmania in 1959. Trevor was an active amateur radio operator, always chasing the "Holy Grail" of amateur radio..... the DXCC and was hoping to achieve this during the next solar cycle.

He was also very much an outdoors man, a life member of the Lindisfarne Sailing Club, a member of various walking clubs and a keen photographer. Flying radio controlled model aircraft was his last outdoor activity before his illness stopped him participating.

Trevor also believed that all AR operators should be a member of the WIA as they are the only governing body who can negotiate on behalf of all Hams. For a period of time he was the QSL manager for the Southern Branch of the WIA now REAST.

For this past year or so Trevor was able to keep in touch with Amateurs and friends by video links on his computer.

VK7TS will be sadly missed by his wife Sheila, sons Neil and Nick, daughter Lorraine and all his grandchildren.....not to mention all his AR friends.

Vale VK7TS. (Bill VK7KBG)

30 years and 16,526 km

It is not everyday that an ALARA sponsored YL gets her 30 year membership certificate handed to her in person and in her own country. However, when it does happen, it is a rare occasion.

This is exactly what Dot Bishop VK2DB did for her German sponsee Christa DJ1TE when she added a German leg to her trip to Switzerland with OM John VK2ZOI and their son Ben VK2FBRB in late October.

Dot said, "I have sponsored Christa for years and met her on radio but really never thought I would meet her in person. First we had a wonderful week in Switzerland riding trains and walking kilometres each day. One day as we were travelling back to our hotel in the dark at 6 pm, it snowed. For a Sydneysider, it was magic to see snowflakes drifting by and settling on post and rail fences."

After a week in Switzerland, they took a train to Karlsruhe in Germany where Christa and husband Jo met them.

"I recognised Christa as she was the only lady at the station talking on a 2 m handheld and not a mobile phone. I had previously called her on a simplex frequency but she did not hear me with all the station noise. While staying there I formally presented Christa with her ALARA 30 year Continuous Membership card."

They also visited the beautiful old monastery at Maulbronn and a Besen in the wine growing area. A Besen is a restaurant set up in a family home, serving traditional dishes made from food grown in the local area. They are only open a few weeks every year with a broomstick out the front to signify when they are open.

"We shared a long table with others and every now and then people would burst out in loud, drinking, with songs - lots of talk, laughter and noise," reminisces Dot.

With Nina DL2GRC, another YL who Dot sponsors into ALARA, they were able to visit the proud old university town of Tubingen and the Hohenzollern Castle.

78° North. YLs gather inside the Arctic Circle

and VK5CTY is there to report

It was a rare occasion this year when the YLs of Scandinavian Young Ladies Radio Amateurs (SYLRA) embarked on a rare polar DXpedition to the Svalbard Archipelago, the northernmost DX in Europe.

SYLRA is hosting this rare treat due to popular demand of the YLs as a finale to the SYLRA 2009 meet at Kolbotn near Oslo (Norway) from 3-6 September 2009. The last expedition was the Polar YL meeting 1998 at Longyearbyen, Svalbard.

Here is a special report from ALARA YL Christine Taylor VK5CTY who went on this expedition:

An International Adventure on Svalbard

I was fortunate enough to be able to attend a YL International meeting in Norway. The first few days we were in a lovely hotel, just outside Oslo, then some of us caught planes to the Svalbard Archipelago (it used to be called Spitzenberg) for another few days.

We had a radio station operating in each of the venues and there was a YL operator on duty for 10 or 12 hours a day. I hope you were able to have a contact with either JW1SYL or JW6SYL. The QSL cards should be available soon. Please QSL LA8FOA if you have not already done it.

There were 32 in Oslo, including half a dozen OMs, and 22 of us went on to Svalbard.

There were some faces that will be familiar to the keen DXers out there, including the ones in the main photo: Ruth IT9ESZ, Kay WA0WOF, and Eine SM0UQW. We also had Rosel DLKWF and Evelyne F5RPB, Mio JR3MVF and Sarla VU2SWS, all active DXers.

The Meet was organised by Unni LA6RHA and Ingrid LA6FNA and representatives of each of the Scandinavian countries were there. So the only two YL operators in Iceland were there, along with representatives from Norway, Sweden, and Denmark. Two YLs at their first International were Liz M0ACL and Nicola (Nikki) M5YLO along with Liz's OM Brian G0UKB.

Cheryl N0WBV and her OM John KT0F were present with John's parents (this four had all been at the ALARAMEET in Ulverstone last year, so it was like meeting recent old friends), whereas for me many of the attendees were friends whom I had met before. But perhaps only once before. As YL amateurs, it makes no difference how long ago we have met; we meet again as old friends.

Apart from meeting and greeting we were taken to some interesting places near Oslo. One of the most interesting was the fort at the mount of Oslofjiod which succeeded in sinking a German boat carrying soldiers to invade Norway in June 1940.

Although the sinking did not stop the invasion, it delayed it by 24 hours and allowed a number of important people to escape to England where they could live to fight another day.

We also had time to spend in a village devoted to all things Christmassy and there was time for shopping in Oslo as well. The OMs were taken on a special excursion while the YLs were having a conference. They went to a fire station and were able to go up in a platform lift. Definitely an exciting outing. Every little boy wants to be a fireman at one time or another, so they had a second chance.

To get to Svalbard we had to take a plane to Tromso and then another plane to Svalbard. As we had several hours between planes in Tromso, we had a chance to see something of the city. We crossed the fjord by a beautiful bridge but were taken under the sea via tunnel on the way back. I was shocked to see, not one but at least two road crossings IN THE TUNNEL. This is certainly nothing I had ever expected to see, anywhere.

For an Australian, the weather on Svalbard was very different. The morning temperature was about +3° C and the afternoon temperature reached +6° C, but as long as you wear padded clothes and there is no wind you can do whatever you wish. Wind certainly makes you aware that it is cold.

Instead of car parking, there are places designated for snow scooter parking! The shops sell goods duty free, so we all bought some goodies.

There was a boat trip to Barentsburg, a Russian possession. Like Langerberg, the town we stayed in, Barentsburg is a coal mining town. However, as a Russian possession, to ring a Russian phone number is a local call but it is a long distance call to Langerberg!

The boat we were on was used by the local rescue team for practice at landing on a boat from a helicopter, and while we were looking around Barentsburg, the local school children (15 in all) went on an excursion on the boat. We saw bergy bits in the water and had a small block of ice fall from the roof of an ice cave, into the water – as we watched. Interestingly enough, because the block fell at the mouth of a cave, the sound was like a cannon going off, probably from the echo effect. Most impressive.

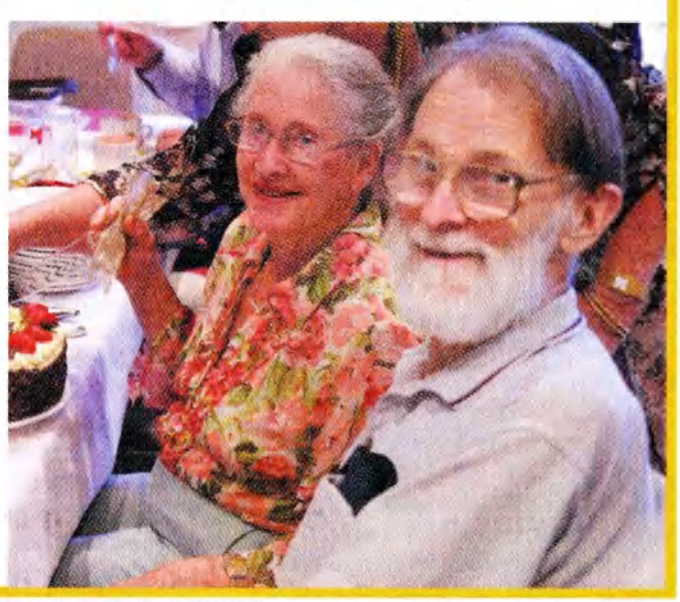
The International Meet in Oslo and the visit to Svalbard was all exciting for me. I hope you had the chance to make a contact or two with the special event stations during that fortnight, too. Everyone took a turn at the mike or the key and the result was very satisfactory, though there is some work to do now dealing with the QSL cards.

There was only one sadness: Matthias who had hosted Unni and Ingrid while they were on Svalbard, and who had loaned us his shack, became an SK very suddenly about a month after we were on the Island. Our sympathy goes to Inger and all his friends. **ar**

50 years Married, 30 Years ALARA

Former ALARA committee member Marilyn Syme VK3DMS, who just retired, with her OM Geoff VK3ACZ celebrate their golden (50th) wedding anniversary with the South Australian ALARA YLs at the Morphett Arms Hotel.

The couple were in Adelaide, away from their home in Mildura. The anniversary lunch was organized by Jenny VK5FJAY (behind Marilyn). Earlier this year, Marilyn was the first ALARA member to be awarded a certificate of appreciation from ALARA for her 30-year stint in the association.



Marilyn VK3DMS and Geoff VK3ACZ celebrate their golden wedding anniversary. Photo by Kevin Zietz.





Ruth IT9ESZ, Kay WA0WOF, and Mio JR3MVF share a moment

2009 Svalbard : ALARA YL Christine Taylor VK5CTY (bottom right) attends 2009 polar DXpedition to Svalbard with the YLs of Scandinavian Young Ladies Radio Amateurs (SYLRA) near Oslo (Sweden). Photo by Christine Taylor VK5CTY.

Craig Edwards VK8PDX
vk8pdx@yahoo.com.au

Contest Calendar for December 2009 — January 2010

December	5 - 6	ARRL EME International (50-1296 MHz)	All
	12 - 13	ARRL 10 metre Contest	CW & Phone
	12 - 13	UBA Low Band Contest	All
	13	SKCC Weekend Sprint	CW
	18	Russian 160-Meter Contest	CW & Phone
	19	OK DX RTTY Contest	RTTY
	19	RAC Canada Winter Contest	CW & SSB
	19 - 20	Croatian DX Contest	CW
January	1 - 31	**Ross Hull Memorial VHF/UHF**	**All**
	2 - 3	ARRL RTTY Round-Up	RTTY
	9 (tbc)	070 Club PSKFest	PSK31
	16 - 17	**Summer VHF-UHF Field Day**	CW & Phone
	16 - 17	UK DX RTTY Contest	RTTY
	29 - 31	CQWW 160m	CW

It has come to the end of the year and most of us have had a go at some of the major world wide contests over the past few months.

We can now start dreaming that hopefully Santa can fit that dream antenna in his sleigh and that the reindeer have the engineering experience to install a new crank-down tower to sit it on.

I write this column just a few days after the CQ World Wide SSB and I am still feeling tired, trying to find the spare time over a few days after the event to catch up on sleep, go to work, write out and send 120 QSL (postage and $US costs...ouch!!!!).

And of course, have the column ready. Which means I am a walking zombie who is dreaming of a Saturday morning sleep in.

It was great to see people diving into 15 m and 10 m with the sun starting to play nice right in time for the contest. Hopefully by the time you have this magazine in your hands we will have regular openings on the higher bands.

One note for CQWW SSB was this news item that we all received just before the start of the contest:

"The amateur radio and contest community worldwide mourns the tragic loss of the entire C6APR team.

Edwin F. Steeble K3IXD/C6AXD, James R. "Randy" Hargenrader K4QO/C6AQO, Peter Radding W2GJ/C6APR and E. Dallas Carter W3PP lost their lives on 21 October when their aircraft crashed and burst into flames shortly after take-off from Summerville, South Carolina.

They were headed to Crooked Island, Bahamas, where they expected to take part in the CQ WW DX SSB Contest."

There was a memorial station during the contest from the Trident Amateur Radio Club (N4EE).

We all give our condolences to the family and friends of those who lost their lives following the hobby that they loved.

Trans-Tasman CW & Digital Contest Results 2009

Over the page are the top scores for all categories. It should be noted that there were some people who participated in this event that didn't put in their entries.

If they had done so, Contest Manager

For details of the
Ross Hull Memorial VHF-UHF Contest 2010
and
Summer VHF-UHF Field Day 2010
see the special section starting on page 41

ZL3AKM pointed out that some would have reached the podium in certain categories.

It is also worth mentioning that ZL3AKM would also have figured very prominently in the awards but as Contest Manager he is not eligible.

Open

1st place	ZL1TM
2nd place	VK2CCC/QRP
3rd place	VK2IM

CW

1st place	ZL1TM
2nd place	VK2CCC/QRP
3rd place	VK2IM

Digital

1st place	VK1WJ
2nd place	ZL2T
3rd place	VK2KDP

QRP

1st place	VK2CCC/QRP
2nd place	VK2IG/QRP
3rd place	VK3TX/QRP

VK

1st place	VK2CCC/QRP
2nd place	VK2IM
3rd place	VK2IQ/QRP

ZL

1st place	ZL1TM
2nd place	ZL2AUB
3rd place	ZL2T

Best Final Hour

ZL1TM

ar

Where to find the Rules

ARRL 10-Meter Contest 2009 Rules

Please visit the website at
www.arrl.org/contests/rules/2009/10-meters.html rms

070 Club PSKFest

This contest is in the digital mode of PSK31 and is sponsored by the Penn-Ohio DX Society. At the time of writing this column the date and rules for 2010 were not confirmed, however it should be in the second week of January, so check out the website at

www.podxs070.com//contests/pskfest_rules.htm

ARRL RTTY Round Up 2010 Rules

Please visit the website at

www.arrl.org/contests/rules/2010/rtty.html

Russian 160 metre Contest

The rules for this event are at

www.radio.ru/cq/contest/rule-results/index11.shtml

OK DX RTTY Contest

The rules for this event are at

www.crk.cz/ENG/DXCONTE

SKCC Weekend Sprint

The rules for this event are at

www.skccgroup.com/sprint/wes

RAC Canada Winter Contest

The rules for this event are at

www.rac.ca/en/rac/programmes/contests/

RAOTC CLUBS

The Radio Amateurs' Old Timers' Club Inc., a group with an interest in older radios and the development of communications, is one of the few national amateur radio clubs in Australia. This brings its difficulties as regards contacts between members because of the distances across the country.

There are socially active cells in VKs 6, 5 and 3 where regular luncheons are held. The Melbourne luncheons are held in March and September and attract an average of 50 members for a three-course meal and a speaker.

The September 2009 luncheon in Melbourne was going to be of great interest with a demonstration and talk on the new digital radio broadcasting mode. However, Sydney had a severe dust storm and our intended speaker was unable to return to Melbourne in time. Not to be put off, Club President Ron VK3AFW persuaded two members present, John Adcock VK3ACA and Drew Diamond VK3XU, to give impromptu talks on their work in establishing a presence on the new VLF band. These were most informative and maybe listened to on the Club website www.raotc.org.au

The Club's magazine OTN is very popular and members can purchase a complete set of over 30 years of issues on DVD from the Editor Bill VK3BR.

Another important regular club activity is the news and information broadcast which goes to air on the first Monday of the month (except for January) at 10 am local time in VK3 and VK6. Ron VK3OM co-ordinates the broadcasts and relays with help from Dave VK3ASE, Drew VK3XU, Colin VK3LO, Laurie VK3AW, Ron, VK3AFW, Dennis VK6KAD, Winston VK7EM, Bill VK3BR and Bruce VK3UV.

Other States can envy VK6s with their access to a large repeater system for the monthly broadcast. Currently there are trials of the broadcast being sent via a UHF repeater VK3RBY in the Dandenongs and on two metres in Northern Tasmania. Our thanks to the relay operators involved.

In recent years the Club has run a QSO Party in September giving members an opportunity to work each other preferably using any older equipment that they may have. This year the results were:

Highest scorers, all sessions, 1st Ken VK2KP 44 points., equal second Mark VK6AR, and Ron VK5RV, 37 points. Top F call, Wayne VK7FWAY, 43 points.

In session 1 Kevin VK3AKT was top with 32 points and session 2 Phil VK6SO just in front of Mike VK3KTO and Luke VK3HJ. The top CW only scorer was Ian VK3JS on 26 points.

Perhaps the numbers of contacts by any individual may not be huge, but there is a high interest level amongst those who do operate. Again, our sincere thanks to everyone who did make the effort.

73 Ian VK3JS, Ron VK3AFW **ar**

Hamads *classifieds* — *Free to Members*

FOR SALE – NSW

MDS downconverter, $10.
N and SO239 switches, filters, SWR bridges, magnetic bases and mobile whips.
Digital satellite RX's -
Nokia 9500S with DVB2000 S/W, $200.
Xanadu DSR, $60.
Zenith DTH300-S, $10.
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Other satellite parts –
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2xDX Antenna DSA527D, Ku LNBF's, $10 each
3xZinwell SAB-09C coax relays, $20 each
4xIrdeto CAM's, not CI, various ages and S/W, $40 each.
AWA RL1500C RX tuned to 1691 MHz, $30.
Contact Roger VK2DNX, on 02 9546 1927 or VK2DNX@Hotmail.com

Books for sale at Scotty's shack are –

Dictionary of Electronics, Chambers, 1981; Principles of electronics, Floyd T, 1981 Bell & Howell; Experiments in electronic circuits, Stanley B H, 1982 Merril; Electronic principles for electronic circuits, Jemmerson J, 1985 McGraw Hill; Transistor and integrated electronics, Kiver M, 1972 McGraw Hill; Transistor electronics, Gerrish H, 1969 Goodheart-Willcox; Australian electrical wiring, Pethbridge K, 1986 McGraw Hill; Digital fundamentals, Floyd T, 1982 Merril; Practical applications of DC theory, 1976 Texas Instruments; Practical applications of AC theory, 1981 Texas Instruments; Basic electronics, NYIT, McGraw Hill; Understanding digital troubleshooting, Radio Shack, Sams; PAL TV servicing, Seal D J, Foulsham; Why it IS so, Sumner-Miller J; 50 basic exercises, Lamoitier J; Understanding oscillators, Davis B, Prentice-Hall; Radio charts and nomographs; Digital data systems, Tocci R, Prentice-Hall; Pulse techniques, US Army; Zener diode handbook, IRC; Transistor data, NS Electronics; Voltage regulator handbook, National Semiconductor; The continuous wave, Aitken H, Princeton University; Dick Smith Funway into electronics, Dick Smith; Getting into microprocessors, Electronics Australia.
Please make a bid by email or text, and on 15 December I will let you know if you are successful.
Scotty VK2KE, on 0438 218 897 or gsco8077@bigpond.net.au

Morse key paddle, Hi Mound type No Mk 701, for use with an electronic keyer, in immaculate condition, hardly used and in original box, $85.00 ONO.
Yaesu FLDX-400 transmitter, collectors item, is in going condition and unmodified, $300.00 ONO.
Scotty VK2KE, on 0438 218 897 or gsco8077@bigpond.net.au

WANTED - NSW

A fuse holder to suit a Collins R391 RX.

Nick L20106. Phone 02 9477 2134

WANTED - VIC

Wanted: Collaro turntable, model RC54 or similar, or a tone arm complete with cartridge, for an Astor 6 table radiogram, unfinished project.

Barry VK3AK, QTHR. Phone 03 9363 5628, or barryjw@optusnet.com.au

WANTED - QLD

I am assisting a charity in Zambia, in Africa, to set up a shortwave broadcasting facility there. I have a need for a couple of pairs of Jones plugs and sockets. Apparently these are no longer available new. These are the connectors with four pins running one way, and the other four pins at right-angles. Any help greatly appreciated.

John VK4BJ - Phone 07 3378 4483 or 0438 220 742.

FOR SALE – SA

Want a project to keep you occupied over the festive season, or a great present for someone special? The VK5JST Antenna Analyser kits are still available. Build yourself an extremely useful item for your shack, and improve your HF antenna efficiency. For more details see www.scarc.org.au and our dispy ad this issue.

Contact SCARC, Box 333, Morphett Vale. SA. 5162, or email kits@scarc.org.au

FOR SALE - WA

Vintage restored 1950/1960 British 'PANDA CUB' transmitter (35-40 W) which covers 160 to 10 metres, using a 807 PA modulated by a pair of 6L6s, paired with a restored BC-348R receiver (from a Flying Fortress or a Liberator bomber) and a relay controlled TR system. Get yourself a post World War II ham radio station! There are manuals for both radios, and spare valves for the Panda Cub, plus a lovely looking crystal microphone on a stand. $650 for the lot.
Contact Steve VK6VZ by email at: vk6vz@arach.net.au

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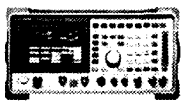
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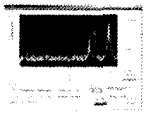
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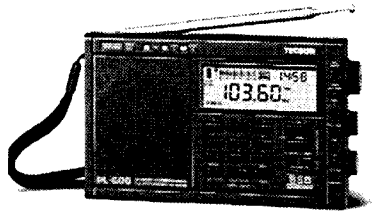
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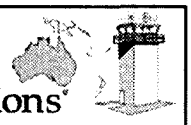
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VK1 VK1WIA: Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.

VK2 VK2WI: Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning..

Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.

VK3 VK1WIA: Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 439.800 VK3RMU Mt St Leonard.

VK4 VK1WIA: Sunday 0900 local via HF and major VHF/UHF repeaters.

VK5 VK5WI: Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975

VK6 VK6WIA: Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North.

Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North

Also in 'Realaudio' format from the VK6WIA website.

VK7 VK7WI: Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15.

Tuesday 2100 local VK7RMD NW 146.625.

VK8 Sunday 0900 local, on 3.555, 7.050, 10.130, 14.337, 145.900 (DARC VK8DA).

Sunday 0900 and 2000 local 145.900 IRLP 6800 Katherine (Mike VK8MA).

Sunday 1000 local 439.150 Katherine (Steve VK8SJ)

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

Foundation Corner Four
Tools and test equipment

Ross Pittard VK3CE
vk3ce@amateurradio.com.au

This month we look at various tools and test equipment found in the well equipped amateur radio shack.

This can range from a simple soldering iron and multimeter through to highly sophisticated analysers and oscilloscopes. It all depends on the expertise and experience of the individual.

For many amateurs their first experience of electronics is constructing projects described in *Silicon Chip* magazine or for those of us old enough to remember the now defunct *Radio Television and Hobbies* magazine.

When starting out I would suggest a basic soldering iron, some hand tools, a multimeter, perhaps a dummy load and a SWR/power meter. It is worth remembering that the SWR meter often sold with CB radios is sometimes unsuitable for the lower HF bands and particularly the VHF/UHF bands.

Jaycar and similar stores have an extensive range of soldering irons and small digital multimeters.

When buying a multimeter (Figure 1) it is worth considering one with an inbuilt buzzer or continuity tester. When checking for antenna shorts it is far easier to listen for the buzzer than have to look at the meter all the time.

Expect to pay in the range 20 to 50 dollars for a basic soldering iron and 10 to 20 dollars upwards for a digital multimeter.

Hand tools can be purchased individually or sometimes as a technician's kit complete with a case or box. Many high quality but pre loved tools and test gear can be purchased at swap meets and hamfests, although it is always a good idea to check their operation before purchasing.

A small piece of solder and a battery is handy to carry at hamfests so soldering irons can be checked to melt solder and multimeters can be checked to measure volts!!

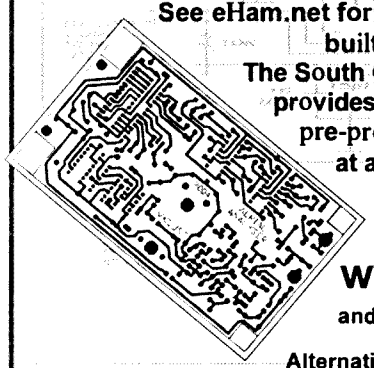
Basic measurements on your antenna systems can be done with a simple power and SWR meter which again can be new or pre loved. Most amateurs start out with a combination SWR/power meter from one of the popular manufacturers and these can range in price from tens to hundreds of

Do you want your HF antennas to perform at their optimum, and are your soldering skills adequate?
if so, this is the shack tool for you.

The VK5JST Antenna Analyser

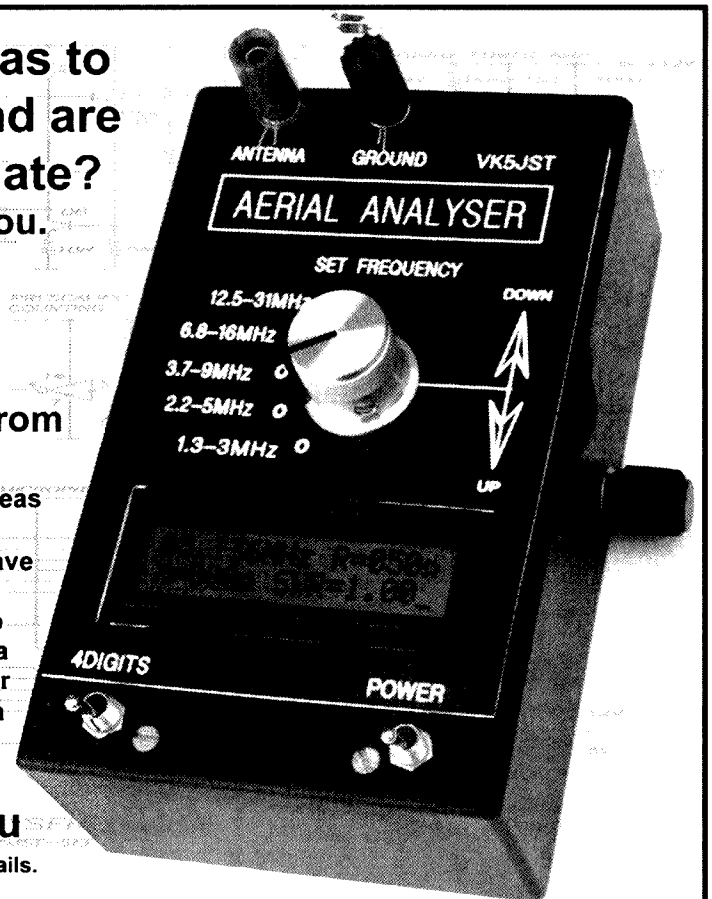
receives rave reviews from hams from all over the world.

As of November we have sold over 250 to overseas buyers this year.
See eHam.net for reviews by hams who have built this useful tool.
The South Coast Amateur Radio Club provides these complete kits with a pre-programmed microprocessor at a very reasonable cost as a fund-raising activity.



See
www.scarc.org.au
and the 'projects' link for full details.

Alternatively, write to SCARC PO Box 333 Morphett Vale SA 5162



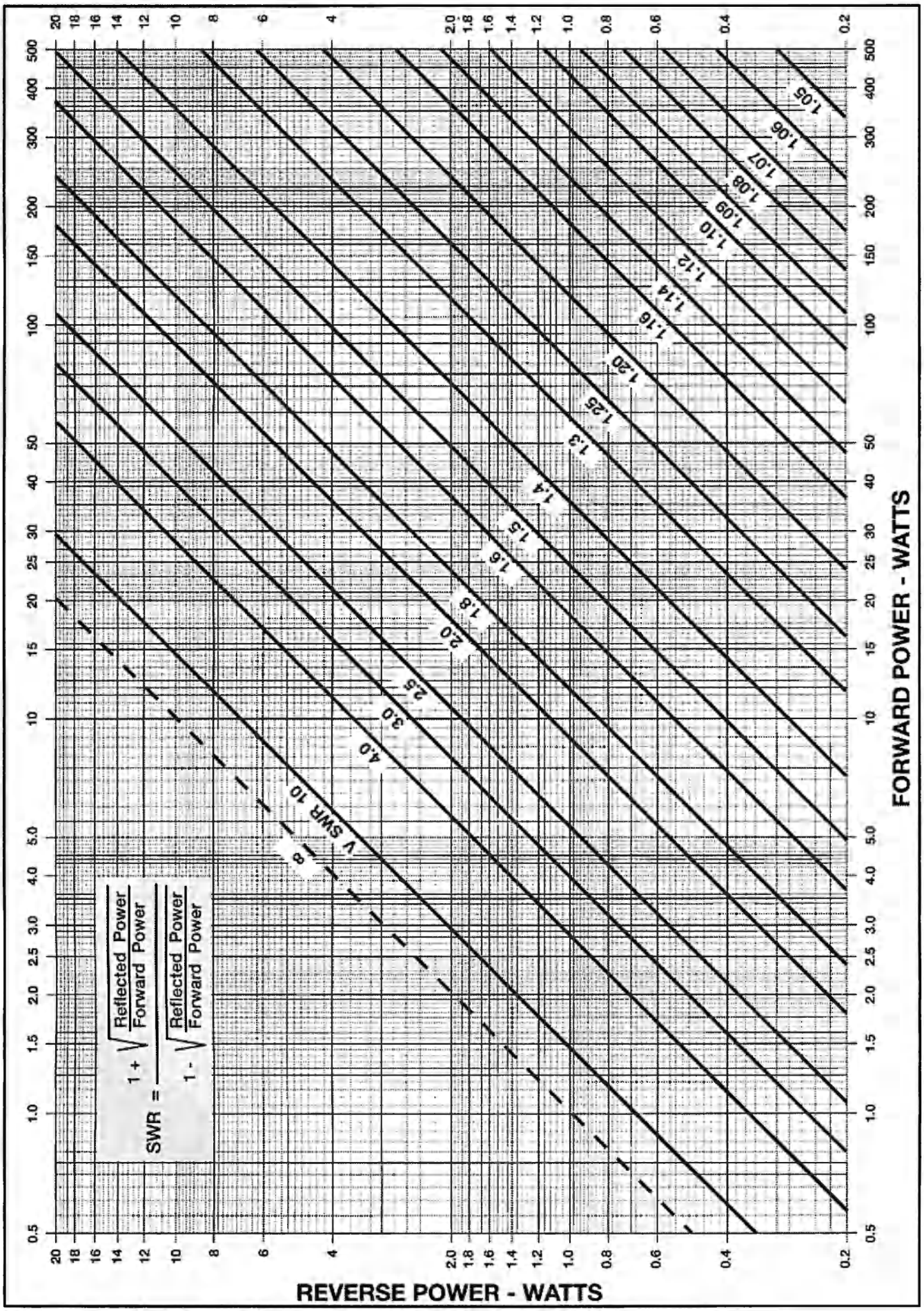


Figure 4: An SWR Nomograph chart showing the relationship between forward and reflected power for different SWR readings.

dollars, depending on power handling capability and frequency range.

It is always a good idea to check the sensitivity of an SWR meter on the 80 metre band as sometimes it is difficult to get full scale deflection with Foundation licence power levels necessary when calibrating the SWR meter.



Figure 1: A typical multimeter.

A good second hand SWR/power meter would usually be around 30 to 80 dollars at swap meets.

A number of popular HF antenna tuners also have inbuilt SWR/power functions which are useful on HF but most would not be suitable for the VHF/UHF bands. Expect to pay in the region of $200 to $300 for a good used antenna tuner with inbuilt SWR/power meter.

A review of the leading amateur power meters was published by QST Magazine (July 2002) and the article can be viewed online at the link below.

A different approach to the SWR meter is the industry standard Bird or Telewave power meters (Figure 2, facing page). The Bird meter can make accurate power measurements from a few watts to several kilowatts across the frequency range of 450 kHz to 2.7 GHz.

This is achieved by using small elements or slugs (Figure 3, facing page) that are accurately calibrated in the factory and cover a small frequency and power handling range. The idea being that various slugs are purchased to cover the frequency range and power handling capability that the user requires.

The Telewave meter comes in two models, one covers the frequency range 2-200 MHz and the other 20-1000 MHz, both with a 500 watt upper limit. Neither model requires additional accessories to function over the designated range.

These meters read both forward and reflected power and when this is done SWR can be calculated by the use of an SWR nomograph (chart).

This is a handy chart (Figure 4 previous page) and can be used, of course, with any power meter once the forward and reflected readings have been made.

If your meter is not switchable, just reverse the leads to read reflected power. For those wishing to print a full size chart it is available for download from my website.

Used Bird meters can be occasionally seen at hamfests starting at about $250, but depending on the number of accompanying elements; individual Bird elements usually sell for around $60 to $70 at swap meets;

Telewave meters are harder to come by and expect to pay $300 to $400 for a good one.

Anyone interested in purchasing a Bird or Telewave meter should have a look at the Martin RF Supply Shop in the US. This is an excellent source for used meters and Bird elements, particularly when the US/Australian Dollar rate is near parity. I have dealt with these people several times and they offer prompt delivery.

Individual amateurs may not want to go to the expense of a Bird or Telewave meter but they are always a good item for the local club to purchase and lend out to members.

Another excellent project is the VK5JST Antenna Analyser (Figures 5 and 6) which was described in the May 2005 issue of *Amateur Radio* magazine. Kits for this project are available from The South Coast Amateur Radio Club (see link below).

The original article, with photos, is available for download from the clubs website; I built one of these a few years ago and would recommend it to anyone who wants to experiment with HF antennas and it would make an interesting and useful club construction project.

A very useful addition to the shack is of course a dummy load; there have been plenty of designs for homebrew loads over the years including a number in this magazine.

A popular load that is readily available at swap meets started life in mobile phone base station transmitters (Figure 7). These are essentially a high power surface mount resistor mounted on a large heatsink and are capable of handling, for a short period, 50-100 watts and are good up to 23 cm. They usually sell for around $10.

Just remember when purchasing second hand gear that most traders at hamfests are quite willing for basic tests to be carried out on site and always check what you are buying before parting with your dollars. My motto is always buy quality items as they will last a lifetime.

That is it for this month, happy hamfest hunting. 73.

ar



Figure 5: The very popular VK5JST Antenna Analyser. (This is the older fascia model which maybe seen at swap meets and hamfests). The new fascia is shown in the ad on page 62.



Figure 2: The Bird and Telewave meters – expensive but reliable and accurate. Note the slug in the Bird meter at left, positioned to measure reflected power.



Figure 3: Two slugs for the Bird meter, each operational on a different band, and with different power levels.

Links:

VK5JST Antenna Analyser http://www.scarc.org.au/

Comparison of popular power meters http://www.palstar.com/qstWM150.pdf

Nomograph Chart: http://www.vk3ce.no-ip.info - then click on downloads.

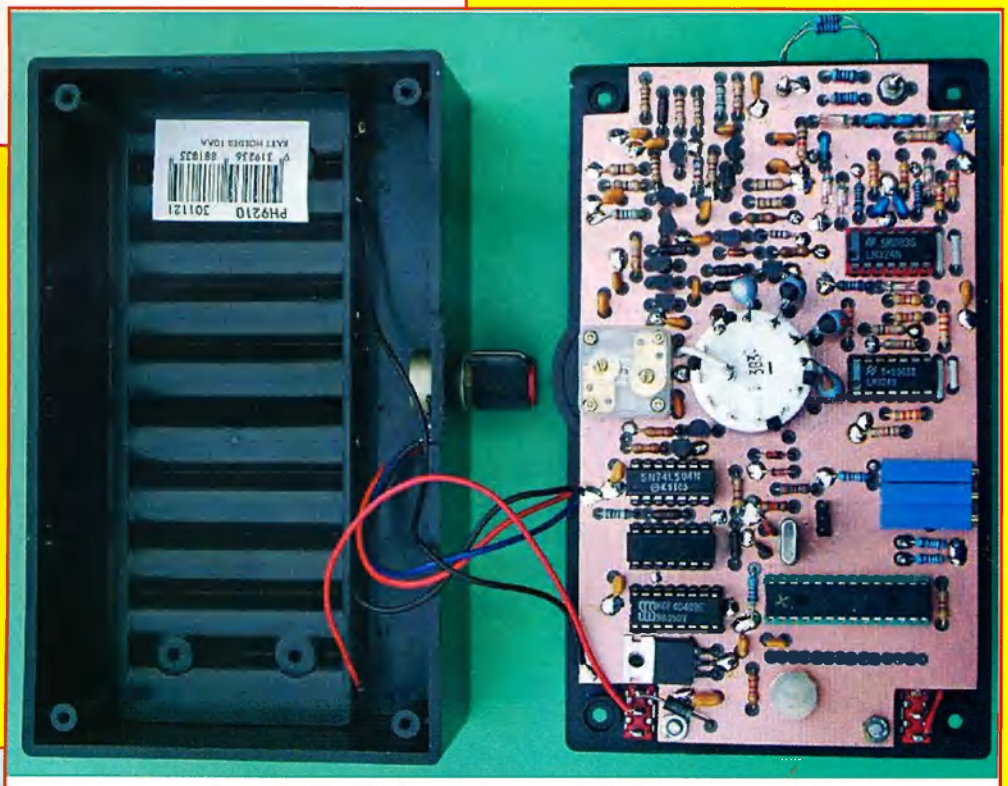


Figure 6: The inside view of the VK5JST Antenna Analyser.

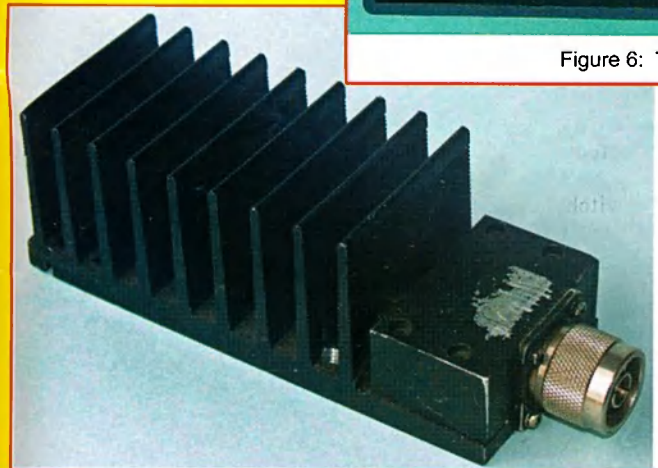


Figure 7: A dummy load, this one rescued from a decommissioned mobile phone base station transmitter.

The VK5JST Antenna Analyser is an excellent home brew construction exercise for any club or individual.

All proceeds from the sale of these kits support the South Coast Amateur Radio Club.

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* The 5 year warranty only applies to amateur transceivers purchased from an Australian authorised Icom dealer on or after November 11, 2009. Further conditions are available on our website.